UNIVERSITY OF ALBERTA

THE EFFECTS OF A METACOGITIVE APPROACH TO SOCIAL COMPETENCE ON SOCIAL PROBLEM SOLVING AND SELF-PERCEPTIONS OF COMPETENCE, CONTROL AND COPING AMONG ELEMENTARY SCHOOL CHILDREN

BY

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I am part of all that I have met.

- Lord Alfred Tennyson

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled The Effects of a Metacognitive Approach to Social Competence on Social Problem Solving and Self-Perceptions of Competence, Control and Coping Among Elementary School Children submitted by Darlene L. Styles in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Educational Psychology in Special Education.

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To my own children who gave me the encouragement to begin this journey and who supported me along the way - who understood that "he who dares to teach must never cease to learn"... Richard Henry Dann.

And to all children in schools everywhere.

Abstract

The purpose of this study was to investigate the effectiveness of a metacognitive instructional approach applied to social skills and strategies, on elementary school children's thinking during social problem solving, and on their self-perceptions of competence, control and coping. Research has shown that social competence affects learning and academic outcomes. Also, where traditional classroom approaches to social competence have often failed, a metacognitive approach to instruction has been shown to facilitate transfer and generalization of learned skills and strategies beyond the learning setting and toward active and independent use. To suggest that such instruction would enhance the traditional curriculum in elementary classrooms, it was important to evaluate its potential impact.

This research used multiple methods of data collection to evaluate the effects of this intervention at two elementary schools in Newfoundland, over the final 5 months of the school year. A pretest posttest experimental design was used in Part I with grades 4 to 7 ($n = 98$). Three self-report inventories were used to gather pre and post test data: the Perceived Competence Scale for Children (PCSC), the Intellectual Achievement Responsibility Questionnaire (IARQ), and the Children's Coping Strategies Checklist – 1st Revision (CCSC-R1). In Part II, 14 vignettes posing interpersonal and intrapersonal dilemmas along seven common themes were created. One of each thematic pair was randomly presented to 20 grade 4 and 5 students in the experimental group at pre and post intervention. Children provided "think aloud" responses to the vignettes, which were later examined through protocol analysis. In Part III, a survey evaluated the perceptions and opinions of teachers participating in the intervention ($n = 7$).

Two findings were consistently supported by Parts I to III: positive effects of the intervention on internal locus of control and negative effects on avoidant coping behaviors (significant at $p < .05$ in Part I). A significant decrease in active coping strategies (CCSC-R1) was found in Part I ($p < .05$) suggesting automaticity of strategy use – the ultimate goal of metacognitive instruction. An increased number of metacognitive strategies verbalized in Part II supported teachers' perceptions of positive change in children's ability to actively and independently generalize and adapt social skills and strategies to situations outside of the learning setting (Part III). All teachers reported that student reactions to the intervention were positive and reported various positive effects.

No significant effect was found on self-perceptions of competence (PCSC), although increased competence was reported by teachers in Part III and by students in think aloud verbalizations in Part II. No significant effect was found on distraction coping or support-seeking coping (CCSC-R1). Interestingly, verbalizations of physical aggression and submission to peer pressure disappeared following the intervention as reported in Part II. Implications for intervention and research, and limitations of the study were discussed.

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CHAPTER 1 – INTRODUCTION

There is wide acceptance that many children and youth encounter different stressors today than in the past, as they confront a world that is fast-paced and no longer as predictable or secure as it once was and as they cope, at the same time, with the typical developmental milestones that characterize childhood and adolescence. Educators are concerned about how well children and youth cope with life stresses and, indeed, whether children and youth possess adequate skills to do so. Particularly critical to the school environment, educators question the degree to which life stress interferes with academic achievement levels (Boyle, 1987; Burke & Wolpin, 1985) and subsequent development (DuBois, Felner, Brand, Adan, & Evans, 1992; Shure & Spivak, 1982). Such interference results in tremendous human and economic costs to society and calls for powerful, effective and preventive interventions.

The social and emotional well being of children and youth in our classrooms must be afforded due consideration even as schools primarily strive for academic excellence. In fact, stress related to school has become a significant factor in the lives of many children (Armacost, 1989; Fimian & Cross, 1986; Tatar, 1995). But also, approximately 17% of Canadian children live in single parent families and 15% of families live below the poverty cut-off (Statistics Canada, 1996). Studies show that 1 in 10 children between the ages of 6 and 12 suffer from depression and 8% of adolescents show signs of serious depressive disorder significantly associated with low self-esteem (Canadian Mental Health Association, 1996). In Canada, 25,000 adolescents attempt suicide annually and, each year, 250 adolescents complete the act (Suicide Information and Education Centre, 1996). Approximately 60% of adolescents in grades 7 to 12 report using alcohol and 24% report other drug use, citing peer pressure as the main influence for such choices (Spurrell, 1996). Fifteen percent of children between the ages of 7 and 16 are involved in bullying at school either as bullies or as victims (Olweus, 1994) and the rate of Canadian youths charged with violent crimes in 1998 was 77% higher than it was a decade ago (Statistics Canada, 1998). Unmistakably, these and other social-emotional problems have a profound effect upon the school environment in that, directly or indirectly, they touch the lives of all children and youth.

To cope with a world that is becoming increasingly complex and demanding, children must have an understanding of themselves and of others, they must be proficient in communicating these understandings, and they must know how to solve social-emotional problems effectively and independently. In other words, it is imperative that children acquire social competencies to interact with a rapidly changing world. Socially competent children are more resilient to different kinds of stress and lower stress has been correlated with higher academic achievement levels (Compas, Malcarne, & Fondacaro, 1988; Ladd, Birch, & Buhs, 1999; Newby-Fraser & Schlebusch, 1997; Sheridan & Smith, 1987; Weist, Freedman, Paskewitz, Proescher, & Flaherty, 1995). Conversely, social incompetence can be quite handicapping for children, "reducing the pleasure of accomplishments, lowering self-esteem, impairing academic performance, discouraging active involvement and independence, and limiting future social interactions with others" (Mulcahy, Marfo, Peat, & Andrews, 1993, p. 45). Therefore, schools must share in the challenge of teaching the skills that underlie social competence and they must do so in a proactive and systematic way, rather than incidentally (Mancini, Short, Mulcahy, & Andrews, 1991; Mulcahy, Marfo et al., 1993). By doing so, schools acknowledge social competence as crucial to a child's academic development and the commitment to the whole child is actualized – the commitment to the "skills, knowledge and attitudes [necessary] to be a successful and responsible citizen" (Edmonton Public Schools, 2002).

Although well-intentioned, traditional educational approaches to social competence have focused on the correction of misbehaviors or on the teaching of pre-packaged, short-term social skills programs. However, transfer and generalization of the replacement behaviors or the learned social skills and strategies to new settings and situations have not been achieved with these approaches (Coleman, Wheeler, & Webber, 1993). That is, following intervention, many children fail to practice effective and efficient social problem-solving behaviors outside of the learning setting. While it is critical that children have a repertoire of social skills and strategies upon which to draw in dealing with everyday demands and stresses, they must also become proficient in recognizing when and where to implement these skills and strategies (Pressley, 1995), as well as how to evaluate and monitor them. They must know how to adjust or adapt a strategy should the situation require it (Mulcahy, Marfo et al., 1993). Ultimately, children must learn to generate their own strategies to cope effectively with many of the situations they face.

Previous research has shown that metacognitive instruction can close the gap between knowing specific strategies and active and independent use of strategies (Brenton-Haden, 1997; Campione, Brown, & Ferrara, 1982; Coleman et al., 1993; Ghatala, Levin, Pressley, & Lodico, 1985; Moench, 1999; Mulcahy, Peat, Andrews et al., 1993; Mulcahy, Peat, & Darko-Yeboah, 1986; Wiles, 1997). It follows that a metacognitive approach to the teaching of social competence in classrooms may not only furnish every child with a repertoire of social skills and strategies, but such an approach may also nurture independence in intrapersonal and interpersonal problem solving – skills that are paramount to all of life's achievements. Therefore, the general purpose of this research is to examine such an approach. In this research, the effects of metacognitive instruction on children's thinking during social problem solving and on self-perceptions of coping behaviors, competencies, and attributions of responsibility for performance are investigated. The metacognitive instructional approach utilized in this research is The Strategies Program for Effective Learning and Thinking (SPELT) (Mulcahy, Marfo et al., 1993).

Social Competence

Despite the vast amount of research in the area of social development, there does not seem to be a common definition for what constitutes social competence. For the purpose of this study, a socially competent individual is one who has the ability to comprehend his or her own emotions, thoughts, perceptions and behaviors, as well as the ability to infer and understand another's feelings or emotions, thoughts and perspective (Flavell, 1985). A socially competent individual is more cognitively resourceful and better able to address problem situations, construct plans or strategies for resolving problems, and consider consequences for his or her own actions (Ford, 1982; Spivak, Platt, & Shure, 1976, as cited in Mulcahy, Marfo et al., 1993), all of which are related to positive developmental outcomes (Ford, 1982).

Social Cognition and Metacognition

Flavell (1985) perceives the relationship between social competence and cognition as reciprocal, with competent social behavior mediating cognitive growth and cognitive skills mediating social development. Flavell also suggests that many of the processes underlying cognition and that enable an individual to experience his or her world as stable, structured and meaningful, are the very processes that underlie social cognition – namely categorizing, synthesizing, planning, monitoring and evaluating. In other words, there are common thinking processes that reflect all cognition. On the other hand, there exist some knowledge, skills and cognitive processes that, when applied during the performance of a social task, reflect aspects of cognition that are distinctly social, for example, knowledge about between-person social relations such as friendship, as well as knowledge about within-person processes such as percepts, feelings and thoughts (Flavell, 1985). Ultimately, social cognition greatly influences social behavior and the socialization process (Higgins, 1981).

While a review of the literature revealed diverse conceptualizations of metacognition as it relates to cognition (Allen & Armour-Thomas, 1993; Borkowski, 1996), the following distinctions contribute to the current understanding as adopted by this study. Credited with coining the term "metacognition," Flavell (1979) distinguished between the two concepts with respect to strategic behavior, such that cognitive strategies are invoked to make cognitive progress whereas metacognitive strategies are invoked to monitor cognitive progress. Brown distinguished between cognition and metacognition as the process of knowing versus the awareness of oneself in the process of knowing (as cited in Mulcahy, Marfo et al., 1993). Borkowski, Carr, Rellinger, and Pressley (1990) recognized the interactive relationship between one's knowledge (cognition) and metacognitive processes, but also emphasized the influence of attributional beliefs and affective states on how an individual learns, thinks and relates to others, citing such factors as motivation, locus of control and self-esteem as having an interdependent relationship with metacognitive performance. Conceptually, then, metacognition invokes cognitive strategies that improve cognitive functioning through increased awareness, self-monitoring and self-regulation of the internal processes that govern our beliefs, affects, thoughts and behaviors (Mulcahy, Marfo et al., 1993).

Social Skills and Strategies

This current research involved the teaching of the social skills curriculum, Program Achieve (Bernard, Linscott, & Nicholson, 1997), which encompasses various skills and strategies that underlie social competence (Elias et al., 1992) and that contribute to both academic and non-academic performance. Taking into consideration the social development of children ranging from grades 1 through 8, each volume of Program Achieve consists of 24 lessons constructed around eight content areas: (a) confidence; (b) effort and persistence (motivation); (c) thinking, feeling and behaving; (d) self-acceptance and self-esteem; (e) goal setting; (f) time management and organization; (g) making friends and (h) handling conflict.

Metacognitive Instruction

This research utilized the dynamic teaching and learning methodology, The Strategies Program for Effective Learning and Thinking (SPELT) (Mulcahy, Marfo et al., 1993), which was applied to the repertoire of social skills and strategies from Program Achieve. In a school-wide and curriculum-wide metacognitive approach, SPELT focuses on both learning strategies and strategies for thinking and problem solving (Mulcahy, Marfo et al., 1993). The overall objectives of the SPELT methodology are (a) to enhance skill and strategy concepts, (b) to promote skill and strategy performance, and (c) to foster skill and strategy maintenance and generalization. SPELT progresses from teacher-imposed strategy acquisition to self-generation of strategies. The role of the teacher is to raise students' awareness of their own active roles in learning and thinking, to encourage students to practice across novel situations, and to challenge students to generate new strategies or to apply existing strategies by structuring the learning environment. SPELT strives to develop orderly thinking habits, to motivate students to reach their own solutions to problems and to appreciate the consequences of such. SPELT guides children in "how" to think, rather than drilling on "what" to think.

Summary

The capacity to think and to problem-solve in intra and interpersonal situations contributes significantly to social competence and to the child's ability to achieve academic success. Such thinking and problem solving can be altered by intervention. While previous research often failed to demonstrate transfer and generalization of social competency skills and strategies beyond the learning setting, a metacognitive approach to the teaching of these skills and strategies is expected to do so. By developing children's thinking habits and motivating them to solve their social problems independently, by letting children construct their social environments rather than passively experience them, children are apt to feel more competent and in control in both social and nonsocial arenas. Subsequently, children may be better able to cope with life stresses. If this is correct, a metacognitive approach to the teaching of a curriculum of social skills and strategies may be a viable complement to the traditional curriculum for all students.

CHAPTER 2 – THEORETICAL BACKGROUND

Social Interaction, Intelligence and Learning

Vygotsky (1978) believed that all intellectual and cognitive development is mediated through social interaction, originating as actual relations between human individuals. He proposed that every function in the child's development appears twice, first on a social level and then on an individual level – first between people and then inside the child. Once functions are internalized, they become part of the child's independent developmental achievement. Vygotsky's theory underscores the importance of social competence in the overall development of children and particularly in the development of higher order aspects of intelligence and learning, as all learning processes are defined through social interactions. Bruner (1987) agreed that through the social life, the child acquires a framework for interpreting experience and negotiating meaning congruent with that child's culture.

Vygotsky (1978) proposed that the interaction between the child and others in the child's environment excites the processes of learning that can be invoked in no way other than through social interaction. Vygotsky distinguished between the interpsychological plane where learning occurs between individuals via language and verbal dialogue, and the intrapsychological plane where information is processed independently. The interval between these planes is known as the zone of proximal development of the child and it represents the transition of knowledge from an external event to an internal construct - the difference between problem solving under the guidance of a more experienced and capable member of society and independent problem solving.

As signs and words become the means for the child's social contact with other people, the cognitive and communicative functions of language become the basis of a superior form of activity. As the child's speech turns inward, rather than appealing to another, language takes on an intrapersonal and self-regulatory function. Accordingly, the higher mental processes are subject to inner speech and self-regulation. Thus, self-regulation is a verbal process of socio-linguistic experiences that shape the mind.

Piaget (1962) maintained that a child's ability to successfully complete a task is dependent upon the stage reached in cognitive development. Unlike Piaget, Vygotsky (1978) believed that many experiences exist that have the potential to impress upon the child's developmental level, and that a universal schema for child development does not exist as a function of the child's age. According to Vygotsky, teaching is the facilitation of socially elaborated cognitive processes and the role of the teacher is to work sensitively within the zone of proximal development toward higher levels of reasoning and intellect. Supporting Vygotsky's beliefs, there is evidence that some acquired cognitive functions, as opposed to those genetically predetermined, are amenable to training (Sternberg, Ketron, & Powell, 1982). That is, some components of intelligent behavior can be trained through others (such as a parent, sibling, or teacher) who select, organize and interpret "the world of stimuli for the child" (Feurerstein, Rand, Hoffman, & Miller, 1980, p. 16). Through these training interactions and as the child's own internal learning processes - or metacognitive processes - are stimulated, cognitive as well as social cognitive development are enhanced (Gagne□, 1985).

Social Competence

Described as one of the "significant manifestations of successful human adaptation" (Mancini et al., 1991, p.194), social competence has been defined as "possessing and using the ability to integrate thinking, feeling and behavior to achieve social tasks and outcomes valued in the host context and culture" (University of Dundee, 1998, p. 1). As such, any social act may hold different interpretations from one culture to the next, as well as across contexts within cultures. For example, the act of verbally expressing one's feelings may be highly valued and reflect social competence in one culture, but might be less regarded as such in another. In the same way, the child in a bullying situation may be perceived by adults as socially incompetent within an adult-dominated context, but the child might consider his or her own behavior as quite competent within the context of his or her peer group.

Despite cultural and contextual issues, there is a broad consensus that exists in most societies about what constitutes socially competent behavior. Researchers at the University of Dundee (1998) describe social competence as:

> establishing and maintaining a range of positive social relationships; refraining from harming others; contributing collaboratively and constructively to the peer group, family, school, workplace and community; engaging in behaviors which enhance and protect health; and avoiding behaviors with serious negative consequences for the individual or others or both;

and in the school setting:

> accessing the school curriculum successfully; meeting associated personal, social and emotional needs; and developing transferable skills and attitudes of value beyond school (p.1).

Reschly and Gresham (as cited in Fort McMurray School District, 1993) provided the following conceptualization of social competence:

> (a) adaptive behavior that includes independent functioning skills, physical development, language development and academic competencies, and (b) social skills that include interpersonal behaviors such as accepting authority, conversation skills, cooperative behaviors, "self" related behaviors such as expressing feelings, ethical behavior, positive attitude toward self, and "task related behaviors" such as attending behavior, completing tasks and following directions (p. 5).

Likewise, Mancini et al. (1991) identified reflection, comprehension, conceptualization, decision making, and problem solving as important mediators of social competence. Spivack, Platt, and Shure (1976) described socially adept children and adolescents as having skills in alternative thinking (generating more than one solution to a problem), consequential thinking (the ability to foresee possible consequences of one's actions) and means-ends thinking (the ability to plan and execute a solution to a problem).

In conceptualizing social competence, Flavell (1981) defined social cognitive enterprises as intellectual efforts to think or to learn about social or psychological processes in the self or in others - processes that include perceptions, feelings, motive, ability, intention, purpose, interests, attitudes, thoughts, beliefs, personality structure, or any other such process or property of self or other(s). The monitoring of social cognitive enterprises involves keeping track of how these intellectual efforts are going and taking appropriate measures whenever they need to go differently, in order to achieve intended social goals or tasks. Thus, an important element of social competence involves proficient monitoring of social cognitive enterprises.

In other research where children were asked to identify elements of social competence, Ford (1982) found that socially capable middle and late adolescents assigned high priority to the following social goals: helping others, getting socially involved, and getting along with parents and friends. They also described themselves as having the intrapersonal resources to achieve such goals. In contrast to children with lesser social skills, these adolescents tended to be goal-directed, invested in setting their own goals and in controlling their own destinies, more cognitively resourceful, and better able to think of ways to address social problems and to construct plans or strategies for resolving them. These adolescents also identified empathy as an important factor in social competence.

Developmental Trends in Social Competence

The construction of social meanings as a complex, interactive process begins at least at birth. In fact, by the first year of age, children have learned much about reciprocity in relationships and expected social routines (Bruner, 1975, 1978; Nelson, 1978 as cited in Nelson, 1981) and by 3 years of age, children are capable of differentiating between feelings of self and of others (Dunn, 1987). In a study conducted by Dunn, children younger than 3 years of age were observed to be quite skilled at reading, anticipating and responding to the feelings of their infant siblings. Lagattuta, Wellman, and Flavell (1997) reported that children as young as 4 years of age have an understanding that mental activity, or what they think, can influence their emotions. Pearl (1987) concluded that affective role-taking, cognitive role-taking and perceptual role-taking are developed by the age of 8 years and Harter (1982a, 1985) found that children are developmentally capable of self-perception and of constructing views of competence and general self-worth as persons, also by the age of 8 years.

Kosslyn and Kagan (1981) note a firm developmental trend in social competence in that one will have increasing numbers of options for processing social experiences as one grows older and actually has more experience. This apparent trend is supported by Gottman and Mettetal's (1986) study, in which children's conversations were examined to determine how they might respond to emotion-arousing situations. These researchers concluded that very young children tend to respond to emotional arousal in situations by withdrawing, whereas children in the middle age range tend to contain emotional arousal by constructing rules for social interactions, and in adolescence, children become able to use reason to openly express their emotional experiences. Likewise, Flavell (1981) maintained that as children mature, so do their understandings of the social cognitions of others. According to Flavell, a child does not ascribe social cognitions to others in the early years. Later, the child automatically assumes that the social cognitions of others are congruent with his or her own social behaviors. Eventually, the child recognizes that the intent of others and one's own behavior may, in fact, be incongruent.

Social Competence in the Classroom

Research has shown that within the context of the classroom, a child's social competence can affect his or her learning. A study by Kovacs and Bastiaens (1995) revealed that anxious or depressed children achieve at lower levels and are more likely to repeat a grade. Likewise, the ability of children to control negative thought patterns and feelings of hopelessness impacts on their resilience in dealing with academic disappointments and failures (Dweck, 1996). Impulsivity (McKenzie, 1964), self-assurance (Davids, 1966), high need for approval (Heck, 1972), fear of failure (Simons & Bibb, 1974), self-concept (Kanoy, Johnson, & Kanoy, 1980), and extrinsic motivation (Haywood, 1968), have all been found to influence achievement levels in the classroom (all cited in Borkowski & Thorpe, 1994). When children of differing empathy skills but similar intellectual abilities were compared, those possessing greater empathy skills were found to be more likely to earn higher grades (Nowicki & Duke, 1992).

Elias et al. (1992) identified the components of a classroom curriculum that would be critical to the enhancement of social competence. These include components that reflect the integration of feelings (emotions), thinking (cognition) and actions (behavior) to achieve specific social goals. Feeling components might involve emotional skills, such as identifying and labeling feelings, managing and expressing feelings, delaying gratification, controlling impulses and reducing stress. Cognitive or thinking components might include self-talk or inner dialogue to cope with challenge or to reinforce one's own behavior, reading and interpreting social cues, using steps for problem-solving or decision-making, setting goals, identifying alternative actions, anticipating and evaluating consequences, understanding the perspective of others, understanding what is acceptable behavior, having a positive attitude toward life, and possessing self-awareness (developing realistic expectations about oneself to predict one's own behavior). Finally, behavioral components might include skill instruction in nonverbal communication, verbal communication (such as making clear requests), responding effectively to criticism, expressing feelings clearly, resisting negative influences, giving and receiving compliments, and taking positive actions. Ultimately, programs that promote social competence must focus on those skills that have intrinsic value for the student, have some benefit to the student, and that may be valued by others in the student's environment (Fort McMurray School District, 1993).

The Interrelationships Between Variables Defining Social Competence

A real challenge faced by researchers has been to provide a developmental view of social competence that would explain the interactions between the theoretically distinct variables related to socially competent behavior. In this, the literature is quite diverse. Attempts to identify, observe and measure in a comprehensive and integrated way, the defining features of any social act can be quite perplexing, particularly when one considers the cultures and contexts involved; the subtle features of social information; the intended social goals that might undergo spontaneous revision over the course of the social act; and finally, the interacting thoughts, affect and attitudes, skills and strategies that an individual might apply or experience before, during, and following a social endeavor. This current study makes no such attempt, but does examine cognitive and metacognitive proficiencies that take into account situational characteristics of social and nonsocial tasks, as well as affective variables that include motivation, attributional beliefs, feelings of competence, and stress and coping.

Previous research has attempted to examine the relationships between the above variables, as well as how they might be further related to academic achievement. For example, the relationship between cognition and affect was recently investigated by Barnett and Ratner (1997), who concluded that the two are intertwined in daily life, rather than one being the foundation for the other. Earlier, Lazarus (1982) had argued that emotion and cognition are inherently interactive from birth and that emotion cannot be experienced in the absence of cognitive processes. Research has shown that a relationship exists between high levels of motivation, high levels of self-efficacy and internal locus of control (Harter, 1981; Schneider, Borkowski, Kurtz, & Kerwin, 1986). In addition, research has correlated locus of control, motivation and metacognition (Landine & Stewart, 1998). An external orientation to problems, or an external locus of control, has been shown to increase vulnerability to the effects of life stress (Cole & Sapp, 1988; Weist, Freedman, Paskewitz, Proescher, & Flaherty, 1995). Likewise, poor self-esteem, external locus of control, and high levels of state and trait anxiety have been found to be related to stress and shown to predict classroom burnout (Fimian & Cross, 1986).

The next section provides further discussion of these variables.

Stress and Coping

Stress is understood to be emotional or intellectual strain or tension, short or enduring, that requires some action in order to be resolved or relieved. A stressful event can incite personal growth but, if overwhelming, stress can interrupt healthy development in both children and adults. Coping is seen as a dynamic process - what a person actually thinks and does in a stressful situation (Lazarus, 1993). Lazarus and Folkman (1984) define coping as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p.141). Individuals whose cognitive and behavioral resources include ability to comprehend and manage characteristics of self, of others, and of problem situations are better equipped to apply appropriate and effective coping efforts under stress. In other words, socially competent individuals have more resources to call upon when coping with stressful situations, compared to individuals less competent within the social domain.

Lazarus and Folkman (1984) describe a model of coping that distinguishes between problem-focused and emotion-focused coping efforts, that is, efforts directed at managing stressful situations versus efforts directed at regulating emotional responses to situations. In research with children, Compas et al. (1988) examined this model and investigated middle school participants' capacity to generate solutions to cope with stressful events. Consistently, problem-focused solution alternatives were negatively correlated, while emotion-focused alternatives were positively correlated, with emotional and behavioral problems.

Moos and Schaefer (1993) maintain that all coping efforts can be categorized by function - by active (approach) or passive (avoidance) orientations toward stressful situations. A second dimension of these coping efforts involves the method used to cope - cognitive or behavioral. When these dimensions are crossed, four sub-categories that describe coping efforts result. These include (a) cognitive approach, (b) behavioral approach, (c) cognitive avoidance, and (d) behavioral avoidance efforts.

Rothbaum, Weisz, and Snyder (1982) viewed coping as primary and secondary controls that reduce punishment and enhance reward, the former aimed at influencing conditions or events, the latter aimed at maximizing one's goodness of fit with the condition or event as it might exist. Earlier, Murphy and Moriarty (1976) had also identified two major types of coping, which they labeled Coping I and Coping II. Coping I represents a more active problem solving approach to dealing with the environment, whereas Coping II represents the capacity to manage one's relation to the environment so as to maintain integrated functioning (for example, remaining free from unmanageable anxiety).

Until recently, coping behavior had been conceptualized solely from an adult perspective. Recent increased interests in the way children and adolescents cope with stressful situations have focused on developmental perspectives - the influence of cognitive, social and emotional developmental processes on children's coping styles or strategies. Researchers recognize that as children mature, more complex coping efforts emerge and some common developmental trends are acknowledged. For example, individuals begin to effortfully cope with their environments from a very early age, with babies using a number of strategies to regulate their internal and external environments, for example, by sucking the thumb to self-soothe (Aldwin, 1994). Also, children's coping supports change over time, with young children seeking attachment figures for support, and peer support becoming more salient during adolescence (Maccoby, 1983). Spivack et al. (1976) found that the ability to generate multiple solutions to cope with interpersonal problems emerges as early as 4 to 5 years of age with more complex means-ends thinking appearing between the ages of 6 to 8 years. During middle school and adolescence, the development and increase in metacognitive function may be an important process that allows an older child to cope with several different cognitive strategies at a time, when coping with stressful situations (Flavell, 1985). Finally, as children gain experience with different stressors, they become more skilled at appraising stressful situations, improving the ability to match the demands of the situation to the coping response (Boekaerts, 1996).

In children's research, Skinner and Wellborn (1994) offer a definition of coping as "children's regulation of their behavior, emotion and motivational orientation during psychological stress" (p. 107). Stressful events are defined as those which threaten or challenge the motivational needs of children - namely motivational needs of relatedness, competence and autonomy - and where the source of the stressful event can be the self or the environment. Skinner and Wellborn maintain that children's coping efforts can reflect energized versus enervated behavior, positive versus negative emotion, and committed versus alienated orientation, all directed toward the motivational goals of relatedness, competence and autonomy. This model advocates 36 possible approaches to coping with problems.

Ayers, Sandler, West, and Roosa (1996) conceptualized a simpler four-dimensional model of children's coping composed of active, distraction, avoidance and support-seeking coping strategies. This four-factor model was found to be largely invariant with respect to age and gender.

In summary, the ability to comprehend self and others in the context of a problem situation, elsewhere described as social competence, is an asset to individuals coping with stress. In parallel with social competence, research in children's coping efforts recognizes developmental trends in that children become better able to cope with stressful events as cognitive, metacognitive and emotional processes mature and as children learn to self-regulate.

Motivation

In order for the individual to accept responsibility for his or her own thinking, learning, and problem-solving, he or she must be motivated to engage the cognitive, metacognitive and affective strategies required to do so (McCombs, 1988). That is, both the skill and the will are required (Paris, Newman, & Jacobs, 1985). Previous attempts to explain underlying processes that mediate motivation for goal-directed behavior include research in belief systems, perceptions, expectations, and attributions (Wittrock, 1986).

Early research emphasized the roles of self-efficacy, self-regulation and control in motivation. In 1959, White defined competence as the capacity to interact effectively with one's environment, and competence motivation as the intrinsic need to direct one's attention and to organize activities in order to bring environmental factors under control.

As such, the feeling of efficacy is both the result and the aim of competence motivation and self-efficacy ultimately leads to continued interest. In later research, Kuhl (1987) proposed a model of intervening processes between motivation and performance. Kuhl identified processes that are action-oriented, facilitating goal accomplishment, as well as processes that are state-oriented, influencing the probability that the individual performs the intended task. Both action and state-oriented processes are believed to occur on a metacognitive, a cognitive, and an emotional-affective level.

According to McCombs (1988), an individual enters into a problem or learning situation when positive outcomes are expected. That is, the individual expects to be successful. The functional role of motivation is to help maintain self-views of efficacy or competence and control - self-views that underlie the ability to change negative attitudes and orientations toward the problem or learning situation. McComb defines continuing intrinsic motivation as:

> a dynamic, internally mediated set of metacognitive and cognitive and affective processes (including expectations, attitudes and beliefs about the self and the learning environment) that can influence a student's tendency to approach, engage in, expand effort in, and persist in learning tasks on a continuing self-directed basis (p. 163).

Thus, the level of intrinsic motivation predicts the degree of involvement and degree of persistence in the approach to and during problem solution.

In research investigating the interrelationships between processes that mediate motivation, Harter (1982a, 1985) employed causal analysis procedures to formulate the following model of motivation:

> perceived control → actual achievement level → evaluation of cognitive competence → affective reaction → motivation to engage in further mastery attempts.

Thus, self-worth arises from perceptions of competency and control. Bandura (1986) also emphasized the role of perceived competence or self-efficacy, and perceived self-control or personal agency, in motivation and performance - a relationship McCombs (1988) views as reciprocal. Deci and Ryan (1985) agreed that it is difficult to motivate children if they believe they have no control over the outcome. Ames (1992) maintained that enhancing motivation means enhancing children's valuing of effort and commitment to effort-based strategies.

To summarize, as a prerequisite for taking responsibility in the face of a problem situation, motivation is believed to be generated from "internally mediated" processes of self-regulation or control, and self-efficacy or competence. Researchers agree that individuals are motivated when they feel as though they can effect a positive solution to a problem, in other words, when they feel they have some control over the outcome of the problem situation.

Attributional Beliefs

Attribution theory searches for a causal understanding of human behavior and explores the explanations that individuals give for such. The causes that individuals attribute to their own behaviors – their attributional beliefs – are assumed to influence underlying motivation to perform, as well as performance outcomes. Expanding on original research by Heider, who believed that the causes of behavior are attributed to either situational or dispositional factors, Jones and Davis (1965) further theorized that causes of behavior are explained by individuals as either a correspondence (or consistency) between past and present behaviors, resulting in dispositional attributions, or a non-correspondence (or inconsistency) between past and present behaviors, resulting in situational attributions. Later, Kelley (1973) maintained that causes of behavior are multi-faceted and that attributions of cause are made through logical processes within the individual. In this model, explanations of cause are derived through covariation - cause and effect judgements made over time, or through augmentation - when a least-expected behavior occurs and increases the likelihood of dispositional attributions.

Ames (1984) differentiated between mastery and performance oriented individuals with respect to the attribution of causes of behavior. Mastery oriented individuals are those who are self-regulated and strategy-focused, and who attribute failures to variable and controllable factors (lack of effort, not using appropriate strategies). Individuals who are performance oriented are described as having an external locus of control, lacking in effort when success is not a surety, and assigning self-worth based directly on performance outcomes.

More recently, Weiner (1979, 1990) proposed that explanations individuals give for their successes and failures – explanations of ability, luck, effort and task difficulty - differentially influence their emotional responses, future performance and motivation for performance, depending on the locus of causality, stability and controllability of these explanations or attributions. Effort and ability are considered dispositional attributions, while task difficulty and luck are considered situational attributions and not under the control of the individual. Ability and task difficulty tend to be stable elements, while effort and luck are considered unstable. Higher performance and motivation are said to result from viewing successes as personally caused (dispositional). This was found to be true in research conducted by Goetz and Palmer (1983), wherein high self-concepts of ability were found to lead to high expectancies for success, increased ability attributions for success, a high level of persistence, and the continued use of relevant strategies. Low-achieving students who believed that both ability and effort contribute to their grade, were more persistent than those who made either ability or effort attributions (Grabe, as cited in McCombs, 1988).

Attributional retraining has received much attention in achievement motivation research, guided by the above theoretical perspectives, as well as Bandura's self-efficacy theory and Seligman's model of learned helplessness (as cited in Forsterling, 1985). Bandura held that perceived self-efficacy determines important aspects of thought, behavior and affect. Seligman maintained that relatively permanent self-perceptions of helplessness result when uncontrollability, attributed to stable causes, is generalized across many problem situations.

When children were trained to reattribute failure to a lack of effort, performance in arithmetic problem solving improved significantly (Dweck, 1975). Likewise, Borkowski, Weyhing, and Carr (1988) demonstrated that attributional retraining enhanced maintenance of a summarization strategy. In research with learning disabled children, Borkowski, Weyhing and Turner (1986) showed that a combined intervention involving retraining of attributional beliefs plus metacognitive instruction significantly enhanced study transfer and increased persistence on tasks. In addition, students had a greater expectancy of success and engaged in more strategic behavior. Miller, Brickman, and Bolen (1975) revealed that attributional feedback of either ability or motivation was significantly more effective than persuasion, in increasing the frequency of both academic (math-problem solving) and non-academic behavior (non-littering). In this study, attribution training programs were also shown to enhance self-esteem.

In summary, children's successes on academic and non-academic tasks depend, in part, on their beliefs that effort counts and that they are in control of their own progress. These attributional beliefs underlie motivation and self-esteem, and can be altered by intervention. Effort and ability attributions are required for effective strategy selection and monitoring of complex problem solving tasks - high level metacognitive skills for effective and efficient performance (Carr, Borkowski & Maxwell, 1991). Children who attribute performance to effort and ability expect success, persist on tasks, and demonstrate transfer and maintenance of strategic behavior.

Self-Regulation

Capable problem solvers effectively manage their cognitive and non-cognitive resources and constantly monitor and review the processes they use to solve problems, critical when a genuine challenge is presented and when one gets bogged down by a problem. This self-regulatory behavior is particularly crucial when the presenting problem is social in nature, as the task demands of social problems are seldom static. Research has shown that children's social functioning can be predicted by individual differences in self-regulation and emotionality, predictions that have held true 2 and 4 years following the original assessment (Eisenberg et al., 1997). DeBono (1980) maintained that children need to develop processes of self-regulation in order to be able to manage their thoughts, emotions and behavior. Likewise, before children will be motivated to use problem-solving skills or specific strategies, they must know how to change negative attitudes and orientations regarding themselves and challenging situations, actions that require self-regulated thinking (McCombs, 1988).

Self-regulation involves changing cognitive skills and strategies in response to new or changing task demands (Butterfield & Belmont, 1977). Other terms used to describe these same processes are self-control and executive functioning (Borkowski & Burke, 1996). The self-regulated individual is described as organized, autonomous, self-motivated, self-monitoring, self-instructing and behaving in ways that maximize efficiency and productivity (Lindner & Harris, 1992). Zimmerman and Schunk (1989) define the self-regulated learner as the individual who is metacognitively, motivationally, and behaviorally active in his or her own learning - characteristics found in higher achievers. Research conducted by Montague and Applegate (1993) supports this positive correlation between self-regulation and achievement. These researchers found that higher achievers demonstrated more self-regulated processes when presented with mathematical word problems of increasing difficulty, compared to average students or students with specific learning problems.

The research on higher order thinking and self-regulated behavior emphasizes the role of inner speech, self-verbalization or verbal mediation. Jensen (1971) defined verbal mediation as talking to oneself in relevant ways when confronted with something to be learned, a problem to be solved, or a concept to be attained. Verbal mediation, or self-verbalization, influences the ability to choose to respond consciously and deliberately; reflectively rather than impulsively (Meichenbaum, 1977). By the age of 6 or 7 years, children are able to identify "inner speech", as well as the fact that people silently engage in mental activities (Flavell, Green, Flavell, & Grossman, 1997). Manning, White, and Daugherty (1994) examined kindergarten children's self-guiding speech or self-verbalizations during school tasks and proposed that these are an important link to self-regulated learning, and to cognitive and metacognitive development.

To cope with the task demands of any social problem, an individual must be actively involved in one's own management over the task enterprise. This requires the individual to self-regulate thoughts, emotions and behavior. Some researchers believe that metacognitive skills provide a basic structure for the self-awareness, self-monitoring and self-regulation of both cognition and affect – for the development of positive self control (Brown, 1987; Paris, Lipsom, & Wixson, 1983; Paris et al., 1985). This position will be discussed in further detail in subsequent sections.

Metacognition

The 1970's introduced a cognitive view in the psychological research - a view that emphasized information processing and strategic behavior. The cognitive view held that learning and behavior are activated by processes within the individual and it was shown that younger and poorer learners could be taught to produce the planful and efficient strategies otherwise practiced by better problem solvers. It was the failure to maintain or to generalize trained strategic behavior to other settings that gave birth to metacognitive research. Investigators have subsequently examined the role of metacognition in oral communication, oral persuasion, oral comprehension, reading comprehension, writing, language acquisition, attention, memory, problem solving, social cognition, self control and self-instruction, social learning theory and behavior, personality and education (Flavell, 1992).

Crucial to the measured success of any cognitive intervention is the individual's ability to recognize a new situation as a real problem, the motivation to want to solve the problem, and the ability to manage efforts to solve the problem appropriately (Belmont, Butterfield, & Ferretti, 1982). In other words, there should be continued use (maintenance) as well as intelligent use (generalization) of prior problem-solving training, on tasks deemed similar to the original training tasks (Brown & Campione, 1982). Nowhere is this more critical than in the social arena, where problems can be much more difficult to identify and to define than nonsocial problems, and where relevant and important features of such problems can change over the course of problem solving efforts. It is believed, however, that a metacognitive approach to the training of social problem solving can achieve the above markers of successful cognitive intervention.

Definitions of Metacognition

A metacognitive instructional approach to learning and thinking is a vehicle for ensuring maintenance and generalization of skills in that it teaches children not only what to think, but how to think. Biggs (1987) defined metacognition as "knowledge concerning one's own cognitive processes...and the active monitoring and regulation of these processes" (p. 2). Where cognition is defined as the process of knowing, metacognition is defined as one's self-awareness in the process of knowing (Brown, 1978, 1980). Metacognition has also been described as the bridge between memory and decision-making, between motivation and learning, and between learning and cognitive development (Nelson & Narens, 1994) – connections more readily demonstrated by skillful learners. Researchers agree that proficient learners and adept problem-solvers deploy a variety of metacognitive processes over the course of a cognitive enterprise, whereas children with low ability, specific learning disability and attention difficulties are aware of fewer metacognitive variables in task performance (Montague, 1998; Montague & Applegate, 1993; Swanson, 1993; Wong, 1986).

Research efforts have attempted to describe metacognitive behavior during problem solving. To identify the specific components of metacognition as well as determine whether those components might be situation-specific, Allen and Armour-Thomas (1993) examined problem-solving within four situational contexts: emergency, social, academic and chore situations. In this study, factor analysis revealed six components of metacognition that accounted for 62% of the explained variance. The six components supported Sternberg's (1986) conceptualization of metacognitive performance, specifically: (a) decide on the nature of the problem, (b) select components or steps needed to solve the problem, (c) select a strategy for ordering the components of problem solving, (d) select a mental representation for information, (e) allocate resources, and (f) monitor solutions. Analysis also concluded that these components were interdependent and used across all types of problem-solving situations.

Child Development and Metacognition

In support of Vygotskian theory, Wertsch (1978) argued that the roots of metacognition are activated through adult-child interactions. Wertsch, McNamee, McLane, and Budwig (1980) observed mother-child interactions and found that mothers of younger children initially took much responsibility for their children's extraction of relevant information during problem solving. However, as children aged or became more competent in monitoring their own problem solving efforts, mothers decreased their level of control and intervention. Children as young as preschool age have been found to demonstrate cognitive monitoring of their internal states and they were also able to identify mood and fatigue as factors influencing their own memory and learning (Hayes, Scott, Chemelski, & Johnson, 1987).

A review of the research supports the belief that age varies with the comprehension and application of metacognitive knowledge and metacognitive strategies (Biggs, 1987; Bondy, 1984). For example, Flavell (1977) maintained that cognitive development influences ability to identify and define problems, and therefore as children increase in age and experience, they become better able to understand what is required in problem situations. Flavell, Green, and Flavell (1995) explored the developmental nature of metacognition in 14 studies involving children as young as 3 years of age. They concluded that preschoolers were less able to determine when and what, they and others were thinking, compared to children of 7 and 8 years of age. Younger children were able to make simple differentiations among certain types of mental activities such as memory and attention, but more subtle differentiations were not made until later.

The study of children's memory comprised much of Flavell's earlier work in metacognition. Flavell (1992) maintained that young children were limited in their knowledge about their cognitive performance on memory tasks. For example, younger children who felt confident they had remembered a list of items, actually remembered little of the list. In an exploratory study, Kreutzer, Leonard, and Flavell (1992) interviewed 20 children in kindergarten and grades 1, 3, and 5, to sample their knowledge about memory or metamemory. Analysis of the students' responses indicated that kindergarten and grade 1 children were knowledgeable about the fact that information in short-term memory can decay rapidly, that recall of information is influenced by the amount of prior study time, and that the number of items to be remembered influences how much can be recalled. Children in grades 3 and 5 were more planful and self-aware in their approach to memory tasks and they commanded a wider variety of solution strategies. These researchers concluded that a great deal of verbalizable knowledge about memory has been acquired by the end of the elementary years, including the knowledge that memory ability varies over occasion, data type, individuals, the way a person studies, amount of time invested, and planfulness.

Transfer and Generalization

As noted earlier, the ability to generalize and to transfer information from an instructional setting to real life situations is critical to the success of any social intervention. Research has shown that metacognitive instructional approaches with both children and adults support maintenance and transfer of problem-solving strategy use across settings. Brown and Kane (1988) investigated preschool children's abilities to acquire and transfer learning strategies to new problems, without having to be prompted to look for similarities between problem sets. These researchers found that children as young as 3 to 4 years of age showed a learning-to-learn effect, and that strategy transfer was better when the preschoolers provided examples of the strategy during learning, as opposed to the experimenter providing the example. According to Brown and Kane, these findings support "lack of knowledge" theories rather than stage development theories. That is, older children are more competent at task transfer because they have more strategies and metaconceptual competence, as opposed to more knowledge or developmental capacity.

Metacognitive instructional approaches were also investigated by Ghatala, Levin, Pressley, and Lodico (1985), who found long-term strategy maintenance with second graders when the children were trained to focus on the utility or usefulness of the strategy. Campione et al. (1982) found that when mentally challenged participants were given explicit instructions in how to use, monitor and evaluate a strategy in addition to the strategy training, this resulted in more durable use and generalization of strategies compared to training without the explanations, or compared to training where only the significance of the strategy was explained.

Coleman, Wheeler, and Webber (1993) reviewed nine studies that involved a metacognitive approach to strategy training in interpersonal problem solving, with learning and behavior disordered children. These researchers concluded that a combined approach of metacognitive strategies training plus specific social skills training enhances the likelihood of generalization of skills and strategies, as opposed to training in only one or the other approaches.

Metacognitive Theory

Flavell's Theory

John Flavell (1977, 1979) is often credited with the first research in metacognitive theory. In 1979, Flavell provided a model of cognitive monitoring that identified four classes of phenomena: (a) metacognitive knowledge, (b) metacognitive experiences, (c) goals or tasks, and (d) actions or strategies.

Metacognitive knowledge is knowledge or beliefs about those variables that affect cognitive activity. These can be knowledge or beliefs about persons, tasks or strategies. Knowledge about persons as cognitive organisms can reflect within-person characteristics or between-person characteristics (intra- and inter-individual characteristics). Knowledge of task characteristics involves important information related to the task at hand, knowledge such as task familiarity or task difficulty. Finally, strategy knowledge describes the repertoire of strategic responses that could be applied to respond to any task demand.

An efficient learner will be aware of his or her own characteristics as a learner, as well as the demand characteristics of the task at hand and the strategies available with which to respond. Such metacognitive knowledge can have important effects upon the cognitive enterprises of both children and adults (Flavell, 1992). As person, task and strategy interact, one might select, evaluate, revise, or abandon cognitive goals or strategies. In addition, such metacognitive knowledge can lead one to a variety of metacognitive experiences, as well as help to interpret those metacognitive experiences.

Metacognitive experiences are self-evaluations, conscious or unconscious, that arise in the context of any cognitive activity, and that might be considered a system of checks or of quality control (Flavell, 1979). Metacognitive experiences can be brief or lengthy, simple or complex (feelings of knowing, feeling of failure, feeling that study is insufficient) and can occur before, during or following a cognitive enterprise, particularly in situations that stimulate a lot of careful and conscious thinking.

Goals or tasks are the expected outcomes of any cognitive activity and monitoring of the cognitive activity is required if the goals or tasks are to be realized. Ultimately, Flavell (1979) distinguishes between cognitive strategies (or activities) as those invoked to make cognitive progress, and metacognitive strategies as those invoked to monitor cognitive progress.

Flavell (1977, 1985) maintained that acquisition, transformation, storage, retrieval and utilization of social information parallel the same cognitive and metacognitive processes exercised with nonsocial information. Thus, similar mental processes are employed during both social and nonsocial problem solving. Flavell also maintained that children need to be conscious of their metacognitive knowledge when faced with a specific social problem, for example, when trying to recall how accurate previous social judgements and predictions had been in situations like the one currently faced (Flavell 1981). Flavell proposed that children need to learn to attend to metacognitive experiences, to take them seriously (even the brief and less salient ones, such as feelings of uncertainty) and use them to guide subsequent social action. He argued that children can be trained to be strategic in their social problem-solving behavior and he advocated programs that raise the level of children's metacognitive awareness and cognitive monitoring of such behavior.

Borkowski's Theory

Borkowski, Carr, Rellinger, and Pressley (1990) maintain that metacognitive theory is particularly suited to understanding more about the ways in which cognition and affective-motivational states interact, an understanding critical to the interpretation of social interactions. Borkowski et al. conceptualize metacognition in terms of a number of interactive, mutually related but, according to research, theoretically and conceptually distinct components. They propose an integrated model of metacognition that relates specific strategic knowledge and self-regulation, motivation, attributional beliefs, self-esteem and affective states. These researchers maintain that attitudes (such as self-esteem) and motivation are not independent of strategic behavior - that strategy-based actions directly influence self-concept, attitudes and attributional beliefs about personal control. In turn, these personal-motivational states determine the course of new strategy acquisition and, particularly, the generalization and maintenance of strategies.

The causal and bi-directional link between self-regulation and the self-system reflects the uniqueness of this model. The self-system is a complex interdependent system that encompasses such constructs as self-efficacy, self-esteem, locus of control, achievement motivation and attributional beliefs. The importance of long-term personal future goals or "possible selves" is also emphasized in the self-system, and these are believed to represent the first step in the self-regulatory process and in planfulness. The self-system is important because it is the basic support of the metacognitive system and it helps to determine the quality of academic achievement. This latter claim was emphasized in research with underachieving students, wherein Borkowski et al. (Borkowski & Thorpe, 1994; Carr, Borkowski, & Maxwell, 1991) concluded that incomplete or inadequate integration of self-regulation with strong motivational beliefs about the power and the importance of self-efficacy lay at the heart of underachievement. In the same way, Kurtz and Borkowski (1984) revealed differences between learning disabled and non-learning disabled students, not in terms of specific strategy knowledge, but in the application of such knowledge. Learning disabled students employed specific strategies only if motivational training was included in their training programs.

Based on earlier research by Borkowski et al., Borkowski and Muthukrishna (1992) propose a model of metacognition that takes into consideration a developmental context for the relationships between the main components of the metacognitive system – that is, cognition, motivation, and personal and situational characteristics. These researchers outline a set of states, processes and events that are assumed to define competent information processing and reflect sophisticated thinkers, learners and problem solvers. These researchers maintain that a good information processor might possess some or all of the following skills and beliefs, most of which are causally or correlationally related to self-regulation, and most of which can be developed or reshaped by classroom experiences:

1. knows a large number of strategies;
2. understands when, where and why these strategies are important;
3. selects and monitors strategies wisely and is extremely reflective and planful;
4. adheres to an incremental view regarding the growth of mind;
5. believes in carefully deployed effort;
6. is intrinsically motivated, task-oriented, and has mastery goals;
7. does not fear failure, in fact, realizes that failure is essential for success; is not anxious about tests but sees them as learning opportunities;

8. has concrete, multiple images of possible selves, both hoped for and feared selves, in the near and distant future;
9. knows a great deal about many topics and has rapid access to that knowledge;
10. has a history of being supported in all these characteristics by parents, schools and society at large.

Borkowski's model outlines the path of metacognitive development in children in the following way (see Figure 1):

1. Specific strategy knowledge involves the child learning new strategies and learning about the attributes of those strategies. This would include the effectiveness of a given strategy, the range of its appropriate applications, and the range of its use with a variety of tasks. Note that a simple strategy in isolation of the rest of the metacognitive system might in and of itself improve performance.
2. The child then learns other strategies and repeats them in multiple contexts. In this way, specific strategy knowledge is enlarged and the child comes to understand when, where, and how to deploy each strategy.
3. The child gradually develops the capacity to select strategies appropriate for some tasks but not others, and to fill in knowledge gaps by monitoring performance, especially when essential strategy components have not been adequately learned. At this stage, higher order executive processes emerge and this is the beginning of self-regulation, that is, planful learning and thinking. Initially, the function of the executive is to analyze the task at hand and to select an appropriate strategy. Later, during the course of learning, its role shifts to strategy monitoring and revision.
4. As strategic and executive processes become refined, the child comes to recognize the general utility and importance of being strategic (general strategy knowledge) and beliefs about self-efficacy develop. Children learn to attribute successful and

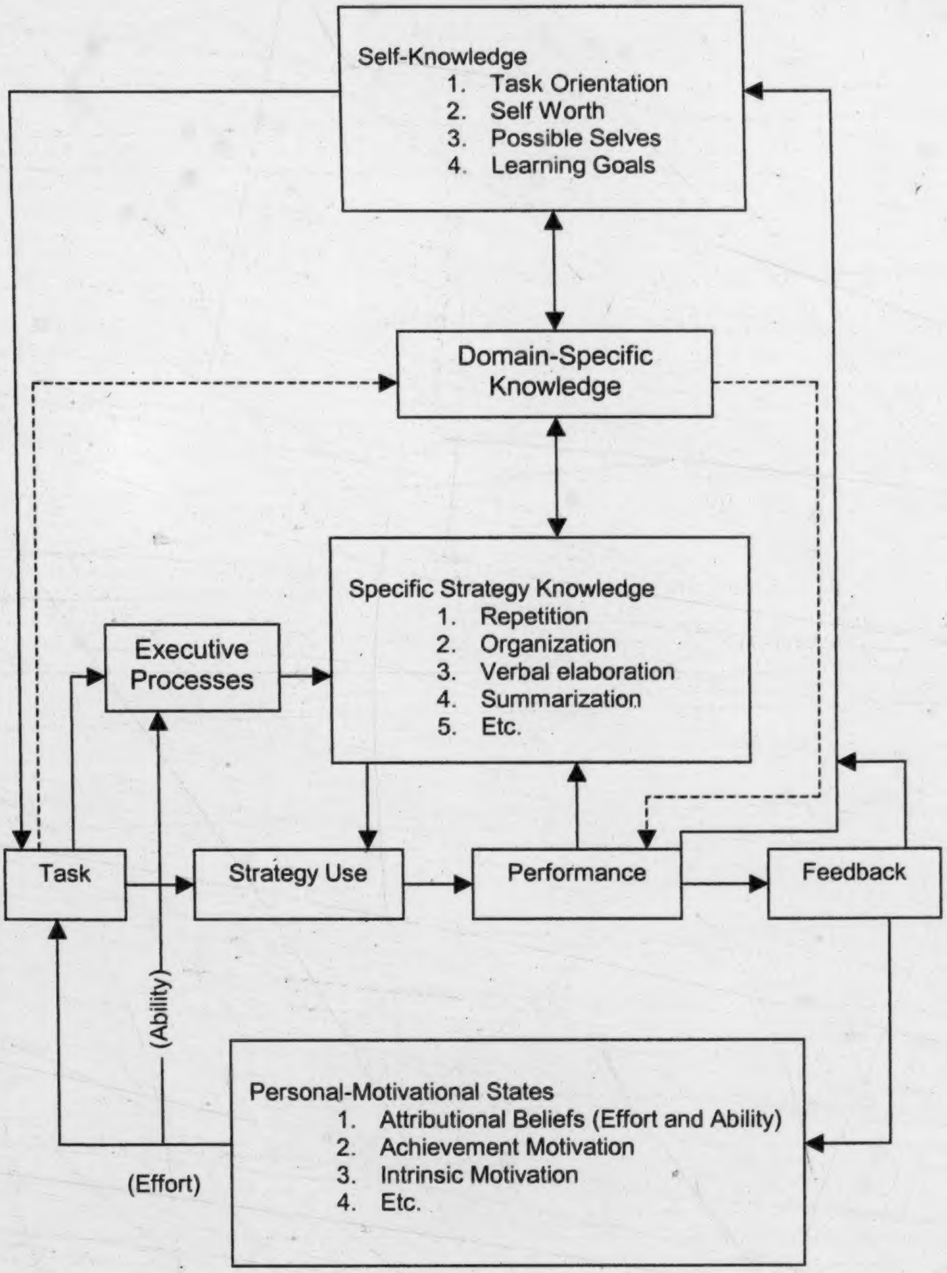
Self-Knowledge
1. Task Orientation
2. Self Worth
3. Possible Selves
4. Learning Goals
Domain-Specific Knowledge
Specific Strategy Knowledge
1. Repetition
2. Organization
3. Verbal elaboration
4. Summarization
5. Etc.
Executive Processes
Task
Strategy Use
Performance
Feedback
(Ability)
(Effort)
Personal-Motivational States
1. Attributional Beliefs (Effort and Ability)
2. Achievement Motivation
3. Intrinsic Motivation
4. Etc.

Figure 1. Cognitive, motivational, and self-system components of metacognition according to Borkowski and Muthukrishna (1992).

unsuccessful learning outcomes to effort expended in strategy deployment, rather than to luck, and to understand that mental competencies can be enhanced through self-directed action. In this way, the metacognitive model integrates cognitive acts (strategy use) with their motivational causes and consequences. A sense of self-efficacy and an enjoyment of learning flow from individual strategic events and eventually return to energize strategy selection and monitoring decisions (executive processes). This latter connection - the association between the learner's reasons for learning and the deployment of self-regulation - is at the heart of this metacognitive theory. After cognition, the child is provided with or infers feedback about the successfulness of performance and its specific causes. This feedback is essential for shaping personal-motivational states that, in turn, energize the executive processes necessary for strategy selection.

5. General knowledge about the world, as well as domain-specific knowledge accumulate. Such knowledge is often sufficient to solve problems, even without the aid of strategies. In these situations, metacognitive processes such as strategy selection are unnecessary, although some motivational components may remain functional and important.
6. Crystallized visions into the future help the child form a number of "hoped for" and "feared" possible selves, providing the impetus for achieving important short-term as well as long-term goals, such as becoming a "competent student" in order to become a "successful lawyer." The self-system takes on a futuristic perspective, providing goals and incentives that stimulate the operation of the entire metacognitive system (Borkowski & Muthukrishna, 1992).

Borkowski's model emphasizes the importance of efficient strategy use, that is, of acquiring sets of strategies, coordinating multiple strategies, and switching strategies when a desired outcome is not obtained. However, Borkowski and Muthukrishna (1992) believe that in order for children to commit to active strategy use and proficient problem solving, teachers must place higher value on the entire metacognitive system, including the affective and motivational processes, than on content in the educational development of the child. A metacognitive approach to teaching and learning should be practiced as part of an ongoing curriculum.

The Strategies Program for Effective Learning and Thinking

The authors of the Strategies Program for Effective Learning and Thinking, or SPELT (Mulcahy, Marfo, et al., 1993) maintain that social competence can be enhanced by a planful, systematic and evaluative instructional approach to teaching children to be active thinkers and independent problem solvers. In nurturing and building upon the child's metacognitive resources, SPELT presupposes the learner as capable of becoming cognitively active and aware of his or her own internal mechanisms of cognitive regulation and control during learning or problem solving. Thus, SPELT emphasizes mental events and processes involved in the receiving, processing, retrieving and applying of strategic knowledge.

While a strong knowledge base of social skills and strategies is necessary for social competence, it is not a sufficient condition for effective and efficient social problem solving and decision making. The latter also demands self-regulatory processes that govern social skill and social strategy use and generalization. In fact, there is scant research to indicate that social skills and social strategies generalize beyond the instructional setting, without systematic training for transfer. SPELT methodology provides for generalization and independent strategy application and adaptation. As metacognition is key to such transfer and generalization, the SPELT teaching methodology invokes awareness of: (a) the significance of using a specific strategy (for example, explaining the purpose of self-questioning), (b) how and when to apply the strategy, and (c) how to generate, adapt or implement the strategy for application to a broader range of problems and in a way that maximizes problem solution. This increases the likelihood that social skills and strategies will be employed when social situations call for their use (Mancini et al., 1991).

SPELT is based on Rigney's (1978) model of instruction which proposes two dimensions and four distinct approaches to the teaching and nurturing of strategy use. These include: (a) explicitness of the strategy on one dimension - detached from content and independent from subject matter versus embedded within content; and (b) source of control on the second dimension - student generated versus teacher imposed. SPELT methodology progresses from teacher imposed strategies during Phase I, through Phase II, to detached and student generated strategies in Phase III (automaticity), the highest level of cognitive performance. This level of cognitive performance reflects independent generation of alternative solutions to problems and consequential thinking which, in children, have been shown to correlate significantly with measures of social outcomes in behavior (Kendall & Fischler, 1984), peer interaction (Olson, 1976), and adjustment (Pelligrini, 1985). SPELT is intended to be implemented in the regular classroom where, over time, teacher control decreases and learner control increases as the teacher plays the role of guide and facilitator, socializing the learner to discover one's role in control over his or her own thinking, learning and problem solving.

The SPELT instructional approach has been given a fair degree of attention in the research. A 3-year longitudinal study was conducted with 900 learning disabled, gifted and average students in grades 4 to 7 (Mulcahy, Peat, Andrews, et al., 1993). The experimental group that received the SPELT intervention was followed during two years of strategy instruction and, in the third year, all strategy instruction was withdrawn. The results of this study were positive and gains were found to be most significant in the area of reading comprehension and related strategies. Also, maintenance and generalization of strategies were evident in the students' performance at post-intervention. Positive effects of SPELT were also found in a 1985 study that involved teachers and students in grades 4 to 12 (Mulcahy, Peat, & Darko-Yeboah, 1986). The results of this study showed significant gains in self-concept, perceived problem solving, metacognitive reading awareness, and strategy use when pre- and post-intervention measures were compared.

In later research, Wiles (1997) investigated the effects of metacognitive strategy instruction or SPELT on the reading performance of adults with reading difficulties. When pre- and post-intervention measures were compared, positive effects were found on student perceptions of control over learning, success in learning, and reading comprehension. Brenton-Haden (1997) studied the effects of metacognitive instruction (SPELT) on self-control over attention, in children identified as having attentional difficulties. Results of the study indicated that children were significantly better able to focus following strategic instruction in positive self-talk and mapping. Moench (1999) compared the effects of traditional interventions versus metacognitive strategies instruction (SPELT) on behavior, in children with behavioral difficulties. Results of this study found that, following metacognitive strategies instruction, children in the experimental group exhibited significantly fewer anxious-passive behaviors, fewer emotional indulgent and hyperactive behaviors, fewer acts of inappropriate behaviors in the classroom, increased physiological awareness, and greater generalization of appropriate behavior across multiple settings.

The general intent of the SPELT instructional approach is to weave a conceptual thread of metacognitive activity across all learning to promote “detached,” student-generated strategy use. This materializes when SPELT is applied to the regular curriculum as opposed to being taught as a separate curriculum, and when SPELT is adopted by all teachers and all students within the school setting. When applied to a broad skill set and diverse subject areas, SPELT reinforces the fact that thinking and problem solving occur in all formal and informal settings. School-wide adoption of SPELT permits maximum opportunity for practice, guidance, and reinforcement of strategic behavior. All school members share a philosophy for metacognitive development in children, and teachers support all children and each other in strategic thinking and problem solving in both classroom and non-classroom settings. In one study, school-wide implementation of SPELT was felt to have quicker and more comprehensive effects on measures of self-concept, perceived problem-solving, metacognitive reading awareness and strategy use, when all teachers in the school were provided training in SPELT as opposed to just a few (Mulcahy, Peat, & Darko-Yeboah, 1986). When any intervention is implemented at the school level, the potential for positive peer influence through same-age and multi-age interactions can be realized. For example, peer influence has been shown in previous research to have positive effects on aspects of social competence that include: social behaviors (Noll, 1997), substance use (Robin & Johnson, 1996), self-evaluations (O'Brien & Bierman, 1988), moral reasoning (Kruger, 1992), sexual harassment (Sabella & Myrick, 1995) and aggression (Tisak & Tisak, 1996). Finally, school-wide implementation of SPELT acknowledges the inclusion of all children.

To summarize, as SPELT promotes recognition of the self as "active" in one's own learning and problem solving, SPELT also provides for a broad approach (across curriculum and grade-level) to achieving this independence through teacher and learner scaffolding of experiences (Pressley, 1995). SPELT promotes student generation of strategies across content areas, settings and situations and is based on the premise that all children can benefit from strategy instruction. An important philosophy underlying SPELT is that instructional approaches promoting learning and thinking ought to take place within regular instruction and not as a separate curricular activity.

Summary

The literature struggles to define social competence in a way that accounts for the participation of many ongoing, dynamic, interactive and theoretically distinct processes. Yet, a child who is considered socially competent might be expected to: (a) demonstrate ability to organize, think critically, solve problems, control attention, and be self-motivated; (b) demonstrate a healthy self-concept and favorable attitude toward learning (Anderson & Messick, 1974); (c) be goal-directed (Baumrind, 1975), active (Ford, 1982), independent (White, 1959), systematic and playful (Spivack, Platt & Shure, 1976), and empathetic (Hogan, 1973); and (d) possess a clear sense of morality and be able to perceive the world as others see it (all cited in Mancini et al., 1991). Socially competent children are more cognitively resourceful and capable of recognizing problems and the impact of their actions.

It is not sufficient that children simply have knowledge of desirable social behaviors. To be able to cope with everyday stresses, children must also be able to translate those behaviors into appropriate and effective actions in the midst of real life situations. A viable method for teaching children to become active thinkers and independent social problem solvers is a method that nurtures metacognitive skills - skills that provide a base for higher level thinking, personal responsibility for performance outcomes, a positive sense of self-efficacy, and a high level of motivation. One such method is the Strategies Program for Effective Learning and Thinking (SPELT). The SPELT instructional approach acknowledges that cognitive and metacognitive skills do not just appear. They are learned from role models - other children and adults - and from the way in which teachers organize children's learning and feedback experiences.

CHAPTER 3 – RATIONALE

Researchers agree that social competence is of critical importance in life. In fact, some believe that all learning and intellectual development originate from our social interactions. Some researchers maintain that cognitive and social-emotional processes are mutually dependent, that one impresses significantly upon the other in all psychological enterprises. Children who lack social competence also lack, in some capacity, the ability to appropriately and effectively respond to intra- and interpersonal issues and, therefore, they are at a distinct disadvantage in many of life's arenas. In essence, these children lack the skills and/or self-regulatory behaviors essential to social competence. These deficits can generate stress for children, stress that results in negative personal and academic outcomes.

Social competence can be enhanced by intervention and schools can share in that responsibility. But this requires more than the teaching of a social skills or social strategies curriculum typically found with pre-packaged programs. What is required is a systematic approach that enhances self-awareness, self-evaluation, self-instruction, self-monitoring, and self-correction of social skills and social strategies, in other words, self-regulation. Thus, the real challenge for any intervention is the transfer and generalization of skills to settings and situations outside of the training setting. The goal of any social intervention must be independent performance, which ultimately results in children who practice more active than passive or avoidant approaches to problems and who are, therefore, better equipped to cope with life's stresses.

Nowhere is the transfer and generalization of skills and strategies more important than in the social domain, where the parameters of any presenting problem can be subject to spontaneous change. Yet, a growing body of evidence supports the claim that metacognition, or knowledge about strategy use, will guide subsequent strategy use across many domains. Furthermore, metacognitive skills can be taught. Research has shown that, with metacognitive instruction, children become more aware, active and self-directed as problem-solvers, and they are able to generalize these skills to new problem situations across many settings (Brown & Kane, 1988; Campione et al., 1982; Ghatala et al., 1985; Kreutzer et al.,1992; Mulcahy, Peat, Andrews, et al., 1993). When this occurs, aspects of the self-system are engaged and enhanced as children take responsibility for their successes and failures, attributing such outcomes to ability and effort. In the same way, feelings of competence, self-esteem and self-worth are also enhanced. Consequently, children are motivated to engage in further problem solving tasks because they feel confident in expecting positive outcomes. Ultimately, self-regulation and a positive self-system give children what they need to cope with problems. This process is probably best explained by Borkowski et al. (Borkowski et al., 1990; Borkowski & Muthukrishna, 1992), who provide a comprehensive model of metacognition that integrates the interacting variables of cognition, self-system, motivation (affect) and situation, factors otherwise independently researched and conceptualized.

As a metacognitive instructional approach, SPELT adopts a model of strategy instruction wherein the student is responsible for determining when a strategy is needed, what strategy is appropriate, and how to generate and implement strategies in a way that maximizes problem solution. As a curriculum within a curriculum wherein teachers constantly cue, model and reinforce the use of learning and thinking strategies, SPELT has been shown to: (a) enhance skill and strategy concepts, (b) promote skill and strategy performance, (c) foster skill and strategy maintenance and generalization, and (d) nurture positive affect (Mulcahy, Peat, & Darko-Yeboah, 1986). Similar results have been found in research with special populations such as adults with learning difficulties (Wiles, 1997), behavior disordered children (Moench, 1999) and attention deficient children (Brenton-Haden, 1997).

A search of the literature failed to uncover studies that had investigated a metacognitive approach to training social skills and social strategies with the general school population (as opposed to special populations), and that had approached instruction in a systematic and structured way that also encompassed the entire curriculum. In this current study, the rationale for school-wide intervention was based on research that incited expectations of: (a) prevention, (b) quicker and more comprehensive effects due to a philosophy shared by all, (c) same-age and multi-age peer support, and (d) spontaneous teacher-student interaction across informal and formal settings. The rationale for an across-the-curriculum approach included optimal reinforcement of all strategic behavior across a broad skill set or diverse subject areas, in both social and nonsocial settings. The overall purpose of this study was to investigate the effects of metacognitive instruction in social skills and social strategies, on elementary school-aged children's thinking during social problem-solving tasks, as well as on self-perceptions of attributions of responsibility, competence, and coping behaviors.

In summary, educators want to support the social competence of children in ways that reduce stress and promote active and independent thinking and problem solving within the social domain. It is therefore important to determine whether an educational intervention that is both proactive and systematic, and that utilizes a metacognitive approach to the training of social skills and social strategies, enhances underlying processes that contribute to social competence and resiliency to stress. To investigate this, the following research questions were addressed by this study:

1. Is there a change in elementary school children's self-perceptions of competence, locus of control, and coping behaviors, following metacognitive instruction in social skills and strategies?

2. How does a metacognitive approach to teaching social skills and strategies influence social problem solving behavior in elementary school children?
3. What are the opinions and perceptions of the teachers involved in the metacognitive instruction of social skills and strategies, with respect to prior training, implementation, parent and student reaction, and student attitude and behavior change?

CHAPTER 4 - METHODOLOGY

The measurement of social competence as a broad construct can be a daunting task, particularly when specific social skills and contexts are considered and as individuals process thinking and experience feelings before, during and following the pursuit of a specific social objective or social goal. Recognizing this, multiple methods of evaluation were utilized to measure the effects of this current study. More than a single measure, more than one informant, and multiple sources that reflect observable and non-observable elements or multiple targets of change (overt behaviors, affective states, and thoughts or cognitions) were considered in data collection to increase validity, reliability and practicality of the research results (Ericsson & Simon, 1992; Ollendick & Hersen, 1984). In Part I of this research, a pretest-posttest, non-randomized control group design was utilized to examine children's self-perceptions of competence, locus of control and coping behaviors. In Part II, interview responses of children in the experimental group were collected at pre- and post-intervention intervals and examined through protocol analysis. In Part III, the perceptions and opinions of teachers in the experimental group were elicited by survey and then analyzed.

Procedure

Introducing the Research

Permission to conduct research within a Newfoundland School District was obtained from the School District Director. Two Principals agreed to participate in the study to represent the experimental and control schools. The researcher made a brief presentation to staff at the experimental school, to provide an overview of: (a) the rationale of the study; (b) the concept of metacognition, as well as SPELT as a metacognitive teaching approach; and (c) the commitment required by school staff with respect to the training workshop, the implementation of SPELT at the classroom level, and data collection. The Principal and staff of the experimental school agreed to full implementation of the intervention, that is, implementation across the curriculum and to include all students and teachers. Finally, the researcher offered the training workshop to the control school, which could occur subsequent to the research period. Figure 2 depicts the overall research agenda.

Participants

The experimental school from a rural community in Newfoundland consisted of 207 students in grades K to 7, all of whom received the intervention. The community was typical of many others in the province with respect to relatively low employment and low to middle-class socio-economic status. There were eight regular classroom teachers in this school, with the majority of teachers having at least 15 years of teaching experience. All teachers were requested to participate in completing a questionnaire following the intervention.

The control school was chosen for its match to the experimental school with respect to age and grade level, geographic location within the school district, and community demographic of employment and school dropout. The control participants included only the grade 4 to 7 population in this school. With a total of 337 students, the control school was somewhat larger than the experimental school.

Informed consent was obtained from parents and guardians of children in grades 4 to 7 in both the experimental and control schools, by means of a consent form and letter describing: (a) the nature and purpose of the research, (b) the tests or measurements to be administered or performed, (c) the rights of the children and parents to confidentiality and anonymity, and (d) the right to withdraw participation at any time (see Appendix A). With informed consent from 85% of the grade 4 to 7 population in the experimental school, 101 students participated in the pre- and post-intervention measures taken in Part I of the research, and 20 students in grades 4 and 5 participated in Part II. With informed consent from 65% of the grade 4 to 7 population in the control

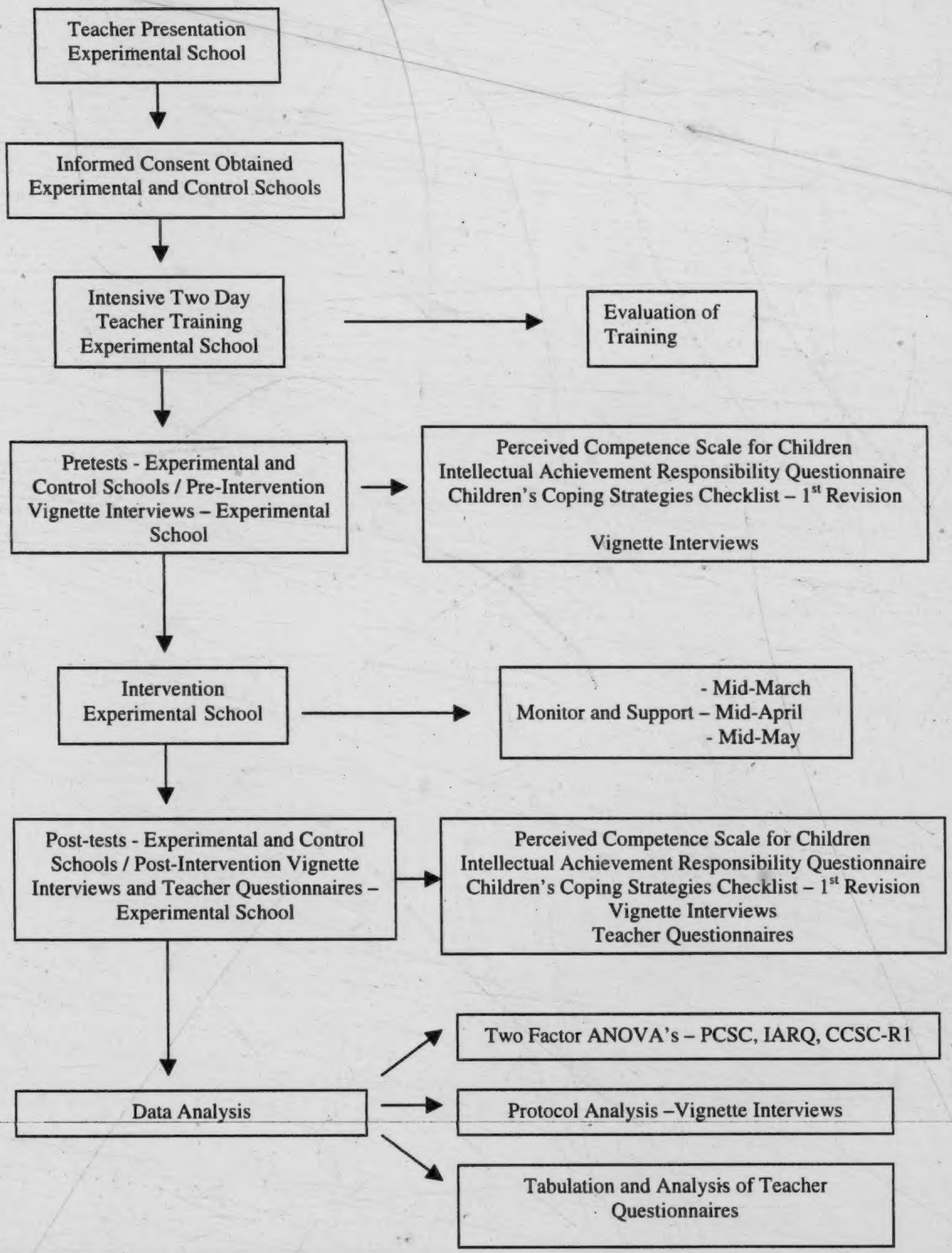
Teacher Presentation Experimental School
Informed Consent Obtained Experimental and Control Schools
Intensive Two Day Teacher Training Experimental School
Evaluation of Training
Pretests - Experimental and Control Schools / Pre-Intervention Vignette Interviews – Experimental School
Perceived Competence Scale for Children
Intellectual Achievement Responsibility Questionnaire
Children's Coping Strategies Checklist – 1st Revision
Vignette Interviews
Intervention Experimental School
- Mid-March
Monitor and Support – Mid-April
- Mid-May
Post-tests - Experimental and Control Schools / Post-Intervention Vignette Interviews and Teacher Questionnaires – Experimental School
Perceived Competence Scale for Children
Intellectual Achievement Responsibility Questionnaire
Children's Coping Strategies Checklist – 1st Revision
Vignette Interviews
Teacher Questionnaires
Data Analysis
Two Factor ANOVA's – PCSC, IARQ, CCSC-R1
Protocol Analysis –Vignette Interviews
Tabulation and Analysis of Teacher Questionnaires

Figure 2. Methodology agenda.

school, 98 students participated in the pre- and post-intervention measures taken in Part I. No students or teachers from the control school participated in Part II or Part III of the research.

Two-Day Training Workshop: Metacognitive Instruction and SPELT

The researcher conducted a two-day training workshop with staff from the experimental school. Training emphasized the application of SPELT to strategies conceived from the social skills curriculum, Program Achieve (Bernard et al., 1997), which had been adopted by the school. Also, exemplars of academic strategies were included in training in order to facilitate application of the SPELT approach to all areas of the curriculum. Teachers were also trained to administer testing instruments. At the end of the two days of training, teachers evaluated their preparedness to implement the intervention and additional support was provided where requested.

Rationale for the research was discussed with workshop participants and overall, the group appeared enthusiastic. The underlying goal of the intervention was presented as the nurturing of active and independent thinking and problem-solving within the domain of social competence. It was further illustrated that such nurturing does not necessarily occur when social skills instruction is offered as a hidden or isolated modular curriculum however, children can become more cognitively alert, resourceful and active when such instruction reflects a metacognitive approach and when it occurs within the context of regular classroom instruction (Mulcahy, Marfo et al., 1993). Therefore, as a proven methodology, The Strategies Program for Effective Learning and Thinking (SPELT) was introduced as the instructional approach that would be investigated in this research, to effect independent generation and transfer of social skills and strategies and ultimately, social competence.

A basic understanding of the concept of metacognition was developed with workshop participants, specifically, "What is cognition?" and "What is metacognition?"

Furthermore, the idea that metacognitive skill can be shaped by instruction was explored. Participants examined their own metacognitive behaviors around the following tasks: (a) grocery shopping as an example from everyday life, (b) a complicated reading task as an example from academic life, and (c) conflict with one's supervisor as an example from social life. These exercises helped to define metacognition and explore specific problem-solving and self-regulatory strategies that may be executed during such events. Also, Socratic dialogue was modeled by the researcher as participants engaged in self-exploration of strategy use. This exercise became the foundation for the belief that a structured approach to "thinking about thinking" can facilitate self-regulation (internal control), and efficient and independent problem-solving and decision-making. Finally, the rationale for school-wide and curriculum-wide implementation of the intervention was presented to workshop participants as a means to support generalization of strategic behavior across multiple settings (subject areas and life experiences) through same-age and cross-age peer influences and through a systematic approach (consistency).

The three clearly defined phases of the SPELT approach were identified in training, the overall goal being to develop children's thinking habits and to motivate children to solve problems independently, that is, to raise their cognitive and metacognitive awareness. The classroom teacher was promoted as the mediator in this process. The SPELT instructional approach was presented as: (a) a general teaching style or orientation, (b) the teaching of a set of teacher generated strategies, and c) teaching toward student control and student generation of strategies. This approach emphasized that teaching of strategies alone is not sufficient to obtain the desired goals of SPELT.

SPELT in the Classroom

The SPELT instructional approach is represented by three phases of implementation, which occur with considerable overlap along a time continuum. The three phases are: (a) Direct Teaching of Strategies, (b) Maintenance and Generalization of Strategies, and (c) Strategy Generation by Students.

Phase I is teacher imposed and involves the direct teaching of a repertoire of strategies. The key feature of this phase is "metacognitive empowerment" in that teachers raise students' awareness regarding strategies and the value and benefits of strategic behavior. In this phase, there is much opportunity for students to discuss their impressions of the strategies learned, as they compare strategy and non-strategy use. Phase I includes seven specific steps of instruction. The first is "Motivation and Measurement" and involves the presentation of a challenging problem, wherein students are made aware that they are not equipped to solve the problem with strategies from within their repertoires. In the second step, coined "Sell Job," the rationale for a "better way" or "more efficient strategy" is presented by the teacher and the new strategy is described in detail. The teacher then models the strategy in a "think aloud" procedure, as the third step of Phase I (Modeling). The fourth step requires the memorization of the strategy through drill (Drill for Memorization) with visual and rehearsal prompts which are gradually removed when the strategy has been memorized. The fifth step involves "Practice" as the teacher provides opportunities for such. Simultaneously, the teacher provides "Feedback" during practice sessions (step six) - feedback that might be positive, corrective, or demand additional rehearsal. The final and seventh step involves the presentation of a similar and again challenging problem, and students evaluate and compare their current performances to their initial approaches.

Students soon become aware that the strategies previously learned are not effective or efficient for all situations and across all settings. Therefore, the goals of

Phase II are for students to become proficient at adapting, modifying and extending strategies across setting and situation, and to maintain improved strategic behavior. Crucial to this phase is Socratic dialogue wherein the teacher leads students through questioning to discover the relationships between, and the application of, the strategies learned in Phase I. This may involve: (a) starting with what is known, (b) asking for multiple reasons, (c) asking for steps in the reasoning process, (d) requesting the formulation of rules from examples, (e) exploring counter examples, (f) exploring misapplication of the strategies, (g) probing for differences among alternative strategies, and (h) asking for predicted outcomes of employing alternative strategies. Control is being shifted from teacher to students as learners identify other settings and situations where the strategies may apply, as well as report the effectiveness of such.

Phase III also employs Socratic dialogue, as instruction is designed to nurture students to generate strategies on their own and to apply previously learned strategies spontaneously. Students are presented with content-free and content-related tasks that challenge them to devise their own strategies. Discussions around strategy use and evaluation of strategy use are conducted. Group and pair discussions are useful tools to demonstrate "think aloud" and they permit peer and self-evaluation of the cognitive processes behind the strategies being used. Teachers and students take advantage of incidental situations to provide opportunity for personal modification of strategies and evaluation of strategy use, strategy success and failure. Practice in Phase III is expected to lead to automaticity.

Applying the Principles of SPELT

Workshop participants, working in teacher-student groups through role-play, selected three different lessons from the social skills curriculum, Program Achieve. In an exercise mediated by the researcher, participants were guided in the application of the principles set forth in Phase I, Phase II and Phase III of SPELT, to the selected lessons.

In the first lesson, for example, students are expected to learn to make confident self-statements where situations require such. The goal of Phase I, then, was to build the strategy for making confident self-statements and to explore the benefits of having such a strategy. A problem situation was presented wherein the student felt challenged. Motivation was then created for seeking a strategy to overcome or to cope with that challenge. This culminated in a four-step strategy for making confident self-statements:

1. Is this situation a **C**hallenge?
2. Do I need a **C**onfidence builder?
3. Repeat my confidence builder **5** times.
4. **Attack** the challenge.

The "sell job" occurred when the benefits of using such a strategy was demonstrated through discussions and through examples provided by the teacher and students. The teacher modeled the strategy through "think aloud" and guided the students to memorize the steps of the strategy (C-C-5-Attack!) through drill. The students were then provided opportunity to practice the strategy through contrived situations and then given appropriate feedback. A discussion between teacher and students explored other situations that called for the use of the strategy and the teacher inquired as to the students' evaluation of the outcomes of such.

In Phase II, participants of the workshop again utilized role-play to demonstrate the Socratic dialogue that would facilitate maintenance, transfer and generalization of the strategy, "making confident self-statements." One example presented during training involved the participant's apprehension about being called upon to role-play. The following questions were proposed by the group to facilitate Socratic dialogue:

1. How did you know the task was difficult for you?
2. How did you feel about the task?
3. What were you thinking?

4. What did you choose to do?
5. How did you know to choose this strategy?
6. What happened?
7. How did you feel after you did this?
8. Was there a better way?
9. What would have happened had you chosen to avoid the challenge?
10. Would you use this strategy again?
11. In what other situations might you find this strategy helpful?
12. Might you need to change the strategy for some situations?

Phase III was not specifically practiced during the training workshop, however the researcher emphasized the importance of capitalizing on situations, both contrived and real, and emphasized the continuance of the Socratic dialogue as the mechanism by which students are cued, for example, to make confident self-statements spontaneously, to adapt the strategy "C-C-5-Attack!" if necessary, and always to self-evaluate the outcome of any strategy used.

Workshop participants were instructed to apply SPELT methodology to all social skills lessons, in order to encourage a repertoire of social strategies and proficiency in strategy building. Participants also had the opportunity during the training workshop to examine several academic strategies taken from the SPELT manual and to discuss the application of SPELT to other subject areas. Finally, the researcher emphasized to participants that SPELT is not a brief instructional tool, but that the approach must be systematic and consistently employed and teachers in this research project were strongly encouraged to apply SPELT across the curriculum.

Data Collection

The researcher provided training to teachers in the experimental and control schools, in the administration of three inventories: (a) the Perceived Competence Scale for Children (Harter, 1982b), (b) the Intellectual Achievement Responsibility Questionnaire (Crandall, Katkovsky, & Crandall, 1965), and (c) the Children's Coping Strategies Checklist – 1st Revision (Program for Prevention Research, 1992). (These instruments are further described in the section on Instrumentation.) During training, teachers became familiar with the instruments, with the instructions for administering each instrument, and with accommodations that might be required of students with reading difficulties. Data from these inventories were collected at pre- and post-intervention intervals from students in grades 4 to 7 in both the control and experimental schools.

The researcher also created a series of 14 vignettes that depicted interpersonal and intrapersonal dilemmas for children and that corresponded with themes that were to be addressed in the classrooms. (These vignettes are further described in the section on Instrumentation.) The vignettes were piloted with a small group of six children and were subsequently presented to 20 grade 4 and grade 5 students from the experimental school, at pre- and post-intervention intervals.

Finally, the researcher designed a questionnaire to survey all teachers from grades K to 7 who participated in the intervention, in order to gather opinions and perceptions regarding the effects of the intervention. (The questionnaire is further described in the section on Instrumentation.)

Implementation and Monitoring of the Intervention

It was important that teachers felt capable to begin the intervention following the training workshop. At the end of the two-day session, teachers were asked to identify potential problem areas. Generally, teachers expressed eagerness to participate in the intervention, but felt that additional practice would be required before they were able to apply the principles of SPELT and engage in Socratic dialogue at a comfort level. These concerns were acknowledged by the researcher and teachers were provided several reminder sheets that could be posted at their convenience to assist with the fluency of the principles of Phase I, Phase II and Phase III of SPELT, and with Socratic dialogue (see Appendix B).

Teachers in the experimental school implemented the intervention over the final 5 months of the 1999-2000 school year. The researcher maintained close contact with school personnel and implementation was monitored mid-March, mid-April and mid-May. At these times, teachers were interviewed as to the progress of the lessons and strategy development, and with respect to compliance with the principles of Phase I, Phase II and Phase III of SPELT. A review of these principles was conducted at these times as well. The researcher reinforced compliance and encouraged teachers to continue to be diligent, systematic and consistent. Generally, teachers reported compliance and required minimal support. All teachers were encouraged to post their strategies in their classrooms and there was evidence of these in all classrooms. Teachers reported that strategies had been created collaboratively between teacher and students and those strategies were three to five steps in length. Because the researcher had reason to be in the experimental school on other occasions, teacher support was also provided in an informal way, for example, by engaging in staff room or casual dialogue in order to review SPELT methodology and the progress of the intervention.

Instrumentation

Part I

At pre- and post-intervention intervals, the grade 4 to 7 students in both the experimental and control schools were administered self-report inventories measuring self-perceptions of competence, locus of control and coping behaviors, to determine the effects of the intervention versus control conditions on those dependent variables. These grade levels were chosen to ensure adequate reading and comprehension abilities with respect to the testing instruments.

The Perceived Competence Scale for Children

The Perceived Competence Scale for Children (PCSC) (Harter, 1982b) was administered to participants prior to the intervention period and post-intervention, to both experimental and control populations. The PCSC was chosen for this study because this scale has good construct validity and reliability, and, as reported by Harter (1982b), separate analyses by grade revealed the factor patterns as very stable across grades 3 to 9. The PCSC measures the child's perceptions of his or her own competencies along four clearly defined factors including: (a) cognitive competence, with an emphasis on academic performance (doing well at schoolwork, being smart, feeling good about one's classroom performance); (b) physical competence, with an emphasis on sport or outdoor games (doing well at sports, learning new outdoor games readily, and preferring to play sports rather than merely watch others); (c) social competence, with a focus on the relationship with one's peers (having a lot of friends, being easy to like, and being an important member of one's class); and (d) general self-worth (being sure of oneself, being happy with the way one is, feeling good about the way one acts, and thinking that he or she is a good person). Finally, the PCSC was chosen for use in this study because PCSC items are designed to offset the tendency for children to respond in a socially desirable manner.

The PCSC consists of 28 items. All scales adhere to a format that provides brief descriptions of two types of children. For example:

Some kids feel that they are good at their schoolwork	BUT	Other kids worry about whether they can do the work assigned to them.

These contrasting descriptions are presented as being equally likely. The children are first instructed to choose the child who is most like them. The next step involves deciding if the statement is either "really true" or "sort of true" for them and then filling in the appropriate box directly on the test form. This results in a score between 1 and 4 for each item, with a high score representing "high" perceived competence. A total score is derived for each participant for each of the four subscales and a mean subscale score is obtained by dividing the total subscale score by the number of items. Thus, the maximum score for each subscale is 4. These mean subscale scores were used in statistical analyses as dependent measures. Two factor analyses of variance (ANOVA's) with repeated measurement on one factor (time) were applied to the data.

Reliability.

Harter (1982b) has reported reliability scores (K-R 20 internal consistency) of .76, .78, .83, and .73 for the cognitive, social, physical and general subscales respectively. Test-retest reliabilities on 208 Colorado students after 3 months, and on a sample of 810 students from New York after 9 months, were reported to be .78, .80, .87 and .70 for the Colorado sample and .78, .75, .80 and .69 for the New York sample, for the respective subscales.

Validity.

The factor structures obtained with 341 Connecticut-California participants aged 8 to 12 years clearly specified four factors corresponding to the four PCSC subscales, which has been replicated in additional studies (Harter, 1982b). Factorial validity was conducted on a sample of 714 New York students and average loadings of .67, .61, .64 and .50 were reported on the cognitive, social, physical and general subscales. Factorial validity on a sample of 293 junior high school students in grades 7 to 9 reported the same factor pattern and average loadings of .57, .45, .53 and .38 on the cognitive, social, physical and general subscales respectively. Convergent validity conducted with pupil and teacher ratings in the cognitive domain demonstrated a developmental trend, with correlations for third through ninth grades reported as .28, .32, .50, .55, .31, .66 and .73 respectively. Baarstad (in Harter, 1982b) reported discriminant validity in the cognitive domain when learning disabled children were compared to non-learning disabled children.

Administration.

The PCSC was administered to classroom groups, under the supervision of regular classroom teachers. Standard directions for the scale were observed with one exception - items were read aloud for the benefit of children with reading difficulties.

Intellectual Achievement Responsibility Questionnaire

Crandall's Intellectual Achievement Responsibility Questionnaire (IARQ) (Crandall, Katkovsky, & Crandall, 1965) examines children's beliefs regarding responsibility for outcomes in intellectual and academic situations. The IARQ focuses on children's beliefs in the instrumentality of their own actions versus the actions of other people in their immediate external environments (such as peers, parents and teachers). An internal locus of control is attributed to individuals who perceive the outcomes of their behavior to be due to factors which are internal to themselves, factors such as their efforts, abilities, skills or strategies. An internal locus of control ultimately generates higher motivation in problem-solving situations and greater persistence in the face of difficulty (Borkowski et al., 1990; Crandall et al., 1965; Harter, 1982a, 1985). Conversely, individuals who attribute their successes or failures to causes external to themselves see things as beyond their control and as inevitable.

Phares (1976) concluded that the IARQ is an appropriate measure of children's locus of control beliefs with respect to intellectual and academic achievements. The IARQ was chosen to investigate the intervention's impact on children's perceptions of their own actions as instrumental in attaining intellectual and academic accomplishments.

The questionnaire consists of 34 forced-choice items describing either a positive or negative achievement experience that routinely occurs in children's daily lives. The participants are asked to check one of two responses indicating either an internal locus of control (self-responsibility) or an external locus of control (due to a force external to the individual), for example:

> If you solve a puzzle quickly, is it
> (a) because you worked on it carefully, or
> (b) because it wasn't a very hard puzzle?

The authors of the IARQ claim that a careful attempt was made in the wording of the internal and external alternatives to avoid discrepancies in the social desirability "pull" of the two responses.

The IARQ was constructed to sample an equal number of positive and negative events. Because it was felt that dynamics operative in assuming credit for good things to happen might be very different from those operative in accepting blame for unpleasant consequences, separate IARQ subscores were built into the design of the questionnaire for internal responsibility for successes (I+) and for internal responsibility for failures (I-), in addition to the internal responsibility total score (I).

Reliability.

Test-retest reliability of the IARQ was reported by Wolk and Eliot (1974) as .55 for internal success (I+), .60 for internal failure (I-) and .62 for total internal (I) scores. Similarly, Crandall et al. (1965) reported IARQ test-retest reliabilities for 47 grades 3, 4 and 5 children following a 2-month interval at .66 for internal success (I+), .74 for internal failure (I-) and .69 for total internal scores (I), significant at the $p < .001$ level. Likewise, the authors retested 70 ninth grade participants after 2 months and reliability coefficients of .47 for internal success (I+), .69 for internal failure (I-) and .65 for total internal scores (I) were found to be significant at the $p < .001$ level. Crandall et al. also computed separate split-half reliabilities for the two subscales of the IARQ: internal success (I+) and internal failure (I-). Testing a sample of 923 elementary and high school students from five different schools representing diverse communities, split-half reliabilities from a random sample of 130 younger children were reported as .54 for internal success (I+) and .57 for internal failure (I-) after correction with the Spearman-Brown Prophesy Formula. For a similar sample of older children, correlations were .60 for both the internal success (I+) and internal failure (I-) scores.

Validity.

With respect to convergent validity, research has found a moderately high correlation between the IARQ and report card grades (r = .54 to .58) (Crandall et al., 1965). Also, IARQ scores were found to be positively and significantly related (.34 to .53) to reading, language and math sub-scores, total achievement test scores, and to report card grades at the elementary level. The IARQ has been extensively used in research related to achievement and academic performance.

Administration.

The IARQ was administered to both experimental and control participants at pre- and post-intervention intervals, by the regular classroom teachers. The instructions were read to the group as were all items on the questionnaire, for the benefit of children with reading difficulties. The Total I score was then used in statistical analysis as a dependent measure. Two factor analysis of variance (ANOVA) with repeated measurement on one factor (time) was applied to data.

Children's Coping Strategies Checklist – 1st Revision

The Children's Coping Strategies Checklist – 1st Revision (CCSC-R1) (Program for Prevention Research, 1992) is a self-report inventory in which children describe their coping efforts. It was chosen for this research as a pre- and post-intervention measure for both the experimental and control groups, to examine the effects of the intervention on children's dispositional coping patterns. Items of the CCSC-R1 are written to represent thirteen dimensions of coping: (a) Cognitive Decision Making, (b) Direct Problem Solving, (c) Seeking Understanding, (d) Positivity, (e) Control, (f) Optimism, (g)

Distracting Actions, (h) Physical Release of Emotions, (i) Avoidant Actions, (j) Repression, (k) Wishful Thinking, (l) Support for Action, and (m) Support for Feelings. These dimensions are reflected in four higher order factors: Active Coping Strategies, Distraction Strategies, Avoidance Strategies and Support Seeking Strategies. Earlier versions of the CCSC-R1 have been used in prior studies at the Prevention Intervention Research Center at Arizona State University. They include the How I Coped Under Pressure Scale (HICUPS), a situation specific measure in which children describe the coping efforts they employed to cope with a specific event, and the Children's Coping Strategies Checklist (CCSC), which taps the child's dispositional style of coping (cited in Program for Prevention Research, 1992). The CCSC-R1 is a revision of the CCSC and due to no updated information on the revision, psychometric characteristics of the original version of the scale are discussed here. The items of the CCSC-R1 continue to be reviewed by the Prevention Research Center at Arizona State University.

Ayers et al. (1996) examined various models of coping in fourth to sixth grade children from predominantly lower and middle class families. In two studies (N = 217 and N = 303), confirmatory factor analysis revealed that the structural model of the CCSC (a four-dimensional structure) composed of Active Coping Strategies, Distraction Strategies, Avoidance Strategies and Support Seeking Strategies fit the data better than the two-dimensional structure of Problem versus Emotion coping proposed by Lazarus and Folkman or the Approach (active) versus Avoidant (passive) coping conceptualization offered by Moos et al. (as cited in Ayers et al., 1996). Also, the four-factor model was largely invariant with respect to age and gender.

The CCSC-R1 contains 54 items wherein, for each item, the children are asked to choose the answer that best describes how often over the past month they performed a specific activity to solve their problems or to make themselves feel better. For example:

When you had problems over the past month, you tried to notice or think about only the good things in your life.

Never	1
Sometimes	2
Often	3
Most of the time	4

To score the dimensions of coping, a mean value of the items that give form to that particular dimension is obtained. Scoring for the four higher order factors of coping is reached by calculating the mean of the dimension scores that comprise a given higher order factor. Thus, the maximum score for each higher order factor is 4. The mean higher order factor scores were used in the statistical analyses as dependent measures. Two factor analyses of variance (ANOVA's) with repeated measurements on one factor (time) were applied to data.

Reliability.

Ayers et al. (1996) found that alpha coefficients for the dimensions or subscales of the CCSC ranged from .46 to .72 in their first study and .51 to .72 in their second study. The authors concluded these alphas are comparable to other children's coping instruments with subscales of similar length, that is, three to five items. Internal consistencies for the higher order factors in the second study reported alphas of .88, .72, .77 and .75 for the Active, Distraction, Avoidance and Support Seeking factors respectively. From the Divorce Adjustment Project and a sample of 258 children between the ages of 7 and 13, Sandler, Tein, and West (1994) found test-retest reliability coefficients for the CCSC following a one week interval to be .80, .64, .79 and .79 for Active, Avoidance, Distraction and Support Seeking coping factors respectively.

Internal consistency coefficients were found for the higher order factors of the CCSC-R1 for 356 children (Program for Prevention Research, 1998). Alpha values for the Active Coping Strategies, Avoidance Strategies and Support Seeking Strategies were reported as .88, .65 and .86 respectively. The Distraction Strategies factor was not used in this study.

Validity.

Using cross-sectional structural equation models across two samples studied by Ayers et al. (1996), Active Coping Strategies was found to be related to higher self-esteem and lower self-reports of depression, whereas Avoidant Coping Strategies was related to increases in self-report of depression and conduct disorder, and a decrease in self-esteem (Ayers, 1991). Sandler, Tein, and West (1994) conducted a cross-sectional and prospective longitudinal study of coping using a version of the CCSC with a sample of children whose parents had recently divorced and found that Active Coping was related to lower levels of depression over a five-month period, and Distraction coping was found to be a prospective predictor of lower internalizing symptoms. In a sample of 354 children of divorce aged 9 to 12 years, Sandler, Pitts, and Tein (1995) found the dimensions of Positivity and Control to be negatively related to children's self-reports of anxiety, and the dimension of Optimism to be negatively related to children's self-reports of depression.

Administration.

The CCSC-R1 was administered to classroom groups, under the administration of the regular classroom teachers. The instructions were read to the group, as were all items on the questionnaire, again for the benefit of children with reading difficulties.

Part II

Vignette Interviews

Interviews were conducted by the researcher to permit closer examination of the possible adaptive effects of the intervention and to answer the research question: How does a metacognitive approach to teaching social skills and strategies influence social problem solving behavior in elementary school children? In contrast to Part I of the research, the intent of the vignette interviews was not to pursue a broad generalizable set of findings, but instead to increase understanding by pursuing depth, detailed information and individual meaning in the responses provided by a small number of children. Therefore, twenty grade 4 and grade 5 participants from the experimental group only (ten males and ten females) were randomly selected and interviewed. The children were asked to respond to a series of vignettes that described interpersonal and intrapersonal dilemmas. Children were required to "think aloud" in responding to the vignettes (see Appendix C).

The vignettes were written by the researcher to target themes that were to be developed by teachers in the classrooms of the treatment school, and the vignettes were then piloted with a group of six children to ensure adequate comprehension and responding. The seven thematically similar pairs of vignettes described situations associated with (a) peer conflict; (b) peer pressure; (c) self-acceptance and self-esteem; (d) making friends; (e) having confidence; (f) effort and persistence; and (g) handling thoughts and feelings. One of each thematic pair was randomly presented to children at the pre-intervention and post-intervention intervals, so that each child responded to seven vignettes at both of these times. Males and females were equally represented in the 14 vignettes.

The vignettes were read to each participant, who was then required to tell the ending of the story by assuming the main character. Each vignette was preceded and succeeded by the following instruction:

> As (the main character), finish this story by telling what you are thinking and what you do.

Each vignette was presented in this format. The responses to the vignette interviews were audio taped and then transcribed and evaluated through protocol analysis.

Because of methodological difficulties in relying on external observation and direct questioning to study internal mental processes, the method of "think aloud" was used to request that participants respond to a contrived set of social tasks. This method calls for protocol analysis of the verbal reports obtained from such procedures. Think aloud and protocol analysis ensure that verbal reports are as valid a reflection of children's thoughts as possible (Ericsson & Simon, 1992). When participants are asked to "think aloud" as they perform experimental tasks, they verbalize new thoughts as these enter attention. The sequence of thoughts is not modified by the instruction to think aloud and there is an increase in the amount of behavior that can be observed compared to the same participant working under silent conditions.

Participants verbalizing their thoughts while performing a task do not describe or explain what they are doing, but verbalize the information to which they attend during problem solution. This mode of verbal reporting is not socially motivated. That is, social interaction such as probing or questioning by the researcher is not practiced, so that the participant maintains focus on the presented task and the same sequence of thoughts as in the silent condition can then be expected (Ericsson & Simon, 1992).

One infers that a verbal report is consistent with the structure of normal cognitive processes and the individual's general skills for verbalizing needed information. Concurrent verbal reports are now generally recognized as a major source of data on participants' cognitive and metacognitive processes (Ericsson & Simon, 1992; Garner, 1988). Concurrent verbal reports and "think aloud" methods have been used in reading, mathematics, writing and memory research.

Part III

Teacher Questionnaires

Questionnaires were distributed to teacher participants in the experimental group to evaluate their opinions and perceptions of the intervention and its effects (see

Appendix D). Questionnaire results were anonymous and 75% of teachers returned the questionnaires for tabulation, analysis and summary (six of eight teachers).

CHAPTER 5 – RESULTS AND DISCUSSION

The results of this research are presented in three parts. Part I yields findings that describe changes in children's self-perceptions of competence, locus of control, and dispositional coping, following a metacognitive instructional approach to the development of social skills and strategies. Part II presents an analysis of vignette interviews with children in the treatment group, conducted at pre- and post-intervention intervals. Part III reports analyses of teacher perceptions and opinions regarding: (a) participation in this study, and (b) the metacognitive approach to teaching elementary-aged children to become more socially competent.

Part I Analysis

The following research question was investigated in Part I of this study: Does a metacognitive approach to instruction in social skills and social strategies affect elementary school children's: (a) self-perceptions of competence, (b) attributions of successes and failures to internal versus external factors, and (c) self-perceptions of coping with everyday problems? In responding to this research question, the PCSC, the IARQ, and the CCSC-R1 were administered to control and experimental participants, at pre-intervention and post-intervention intervals. Mean scores and standard deviations computed from the responses to these inventories are reported in Table 1 for the following dependent variables: (a) cognitive, social, physical, and general competence; (b) internal locus of control; and (c) active, avoidant, support seeking, and distraction coping.

Perceived Competence Scale for Children (PCSC)

Four two factor analyses of variance (ANOVA's) with repeated measurement on one factor (time) were applied to PCSC data to compare measures of children's perceptions of competency within four domains: cognitive competence, social competence, physical competence and general competence (an overall feeling of being

Table 1

Control and Experimental Group Means and Standard Deviations for PCSC, IARQ and CCSC-R1 Dependent Variables

Dependent Variable	Group	Pre-test			Post-test		
		N's	M	SD	N's	M	SD
Cognitive Competence							
	Control	91	3.0064	0.6330	91	3.0453	0.6725
	Experimental	77	3.0395	0.6870	77	3.0983	0.6215
Social Competence							
	Control	91	3.1935	0.5539	91	3.2274	0.5973
	Experimental	77	3.1629	0.6394	77	2.9913	0.7080
Physical Competence							
	Control	91	3.0063	0.6229	91	3.0343	0.6669
	Experimental	77	2.9610	0.7046	77	2.8087	0.7325
General Competence							
	Control	91	3.2275	0.5063	91	3.2056	0.5923
	Experimental	77	3.2469	0.6050	77	3.1244	0.5720
Internal Locus of Control							
	Control	96	26.240	3.965	96	24.792	5.627
	Experimental	92	23.272	5.200	92	24.424	5.153
Active Coping							
	Control	88	2.5264	0.4640	88	2.4580	0.5426
	Experimental	86	2.5463	0.5066	86	2.2674	0.6702
Avoidant Coping							
	Control	88	2.4986	0.5286	88	2.4745	0.5628
	Experimental	86	2.5763	0.4764	86	2.3406	0.6533
Support Seeking Coping							
	Control	88	2.2261	0.6528	88	2.1934	0 .7131
	Experimental	86	2.0487	0.6423	86	1.9063	0.7505
Distraction Coping							
	Control	88	2.1718	0.7005	88	2.2872	0.6418
	Experimental	86	2.2034	0.5806	86	2.2491	0.7700

competent). With respect to the dependent variable, cognitive competence, no main effect or interaction effect for group by time was observed at $p < .05$ level of significance. For the dependent variable, social competence, a significant main effect for group was observed, $F(1, 166) = 8.29$, $p = .004$, however the interaction for group by time did not attain significance at $p < .05$. For the dependent variables, physical competence and general competence, no main effect or interaction effect for group by time attained significance at $p < .05$ level. See Appendix E for Analysis of Variance Tables.

The PCSC is a self-report measure of the child's perceptions of his or her own competencies within the domains of academic performance and cognitive ability, physical aptitude and involvement, peer relationships, and general self-worth. Analysis of PCSC data found no significant change in perceived competence in the group that received metacognitive instruction in social skills and strategies. These findings will be further discussed in the next chapter.

Intellectual Achievement Responsibility Questionnaire (IARQ)

A two factor analysis of variance (ANOVA) with repeated measurement on one factor (time) was applied to IARQ data to compare internal locus of control measures. A significant main effect was observed for group, $F(1, 186) = 10.41$, $p = .001$. A significant interaction effect for group by time was also observed, $F(1, 186) = 10.66$, $p = .001$. Experimental group means for internal locus of control significantly increased from 23.272 to 24.424 compared to control group means, which decreased from 26.240 to 24.792. Figure 3 represents this interaction effect. See Appendix E for Analysis of Variance Tables.

The IARQ assesses the child's beliefs about responsibility for his or her intellectual and academic successes and failures as being attributed to internal factors such as ability, effort, skill or strategy. A positive change in internal locus of control was observed for those children who received metacognitive instruction in social skills and strategies, compared to the control group who reported an increase in external locus of control. One interpretation that must also be considered for such an observation is statistical regression or regression to the mean on the post-test. This will be given further discussion in the next chapter.

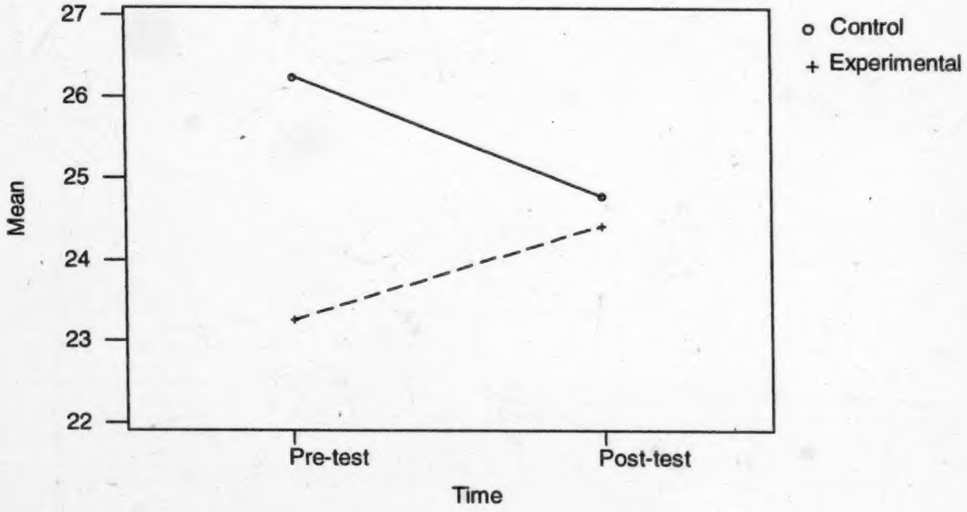

Figure 3. Changes in internal locus of control means for control and experimental groups.

Children's Coping Strategies Checklist – 1st Revision (CCSC-R1)

To determine whether a metacognitive approach to instruction in social skills and social strategies affected the way in which children reportedly coped with everyday problems, four two factor analyses of variance (ANOVA's) with repeated measurement on one factor (time) were applied to CCSC-R1 data. For the dependent variable, active coping, a significant interaction effect for group by time was observed, F(1, 172) = 4.92, p = .028. Experimental group means for active coping decreased from 2.5463 to 2.2674 compared to control group means, which decreased from 2.5264 to 2.4580. Figure 4 represents this interaction effect.

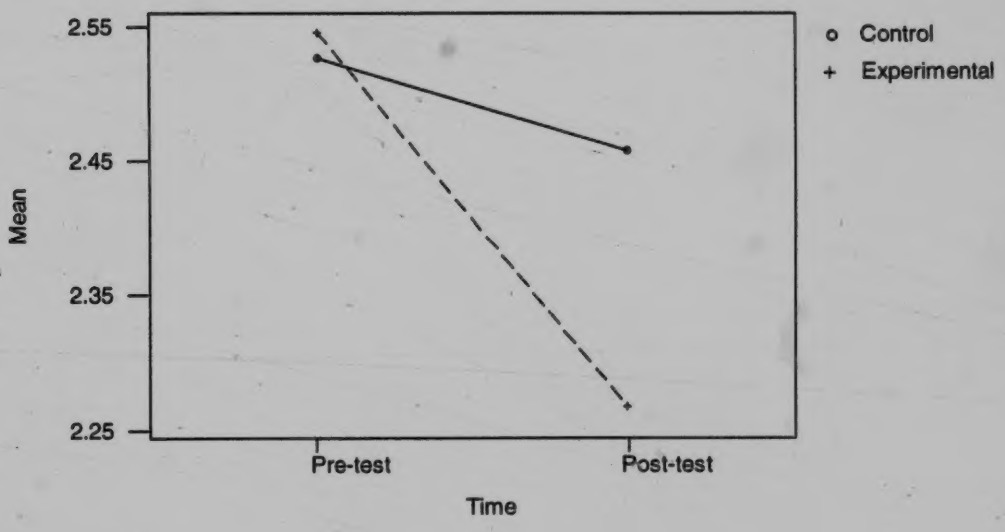

Figure 4. Changes in active coping means for control and experimental groups.

For the dependent variable, avoidant coping, a significant interaction effect for group by time was evident, $F(1, 172) = 4.81$, $p = .030$, with experimental group means for avoidant coping decreasing from 2.5763 to 2.3406 and control group means decreasing from 2.4986 to 2.4745 from pre- to post-test. See Figure 5 for a visual representation of the data.

For the dependent variable, support seeking coping, a significant main effect for group was observed, $F(1, 172) = 5.78$, $p = .017$, however the interaction effect for group by time did not attain significance at $p < .05$ level. With respect to the dependent variable, distraction coping, no main effect or interaction effect for group by time attained significance at p < .05 level. See Appendix E for Analysis of Variance Tables.

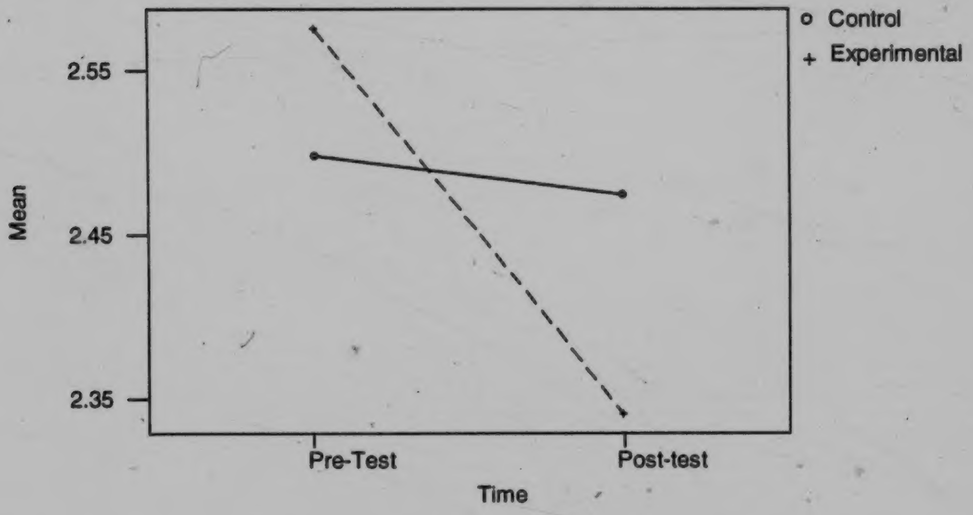

Figure 5. Changes in avoidant coping means for control and experimental groups.

Four domains of coping behavior were examined by the CCSC-R1. These included: active coping strategies (positive thinking and problem-solving efforts), distraction coping strategies (distracting oneself from the problem situation), avoidant coping strategies (actions to avoid the problem or to avoid thinking about the problem), and support-seeking strategies (seeking support for solving the problem or support for one's feelings). Of these, a significant negative change in active and avoidant coping strategies was observed for those children who received metacognitive instruction in social skills and strategies, when compared to the control group.

Part II Analysis

This section examined the social problem-solving behavior of elementary school children both before and following metacognitive strategies instruction. To complement the assessment of the impact of such instruction on children's self-perceptions of competency, control and coping behaviors (in Part I), it was relevant to also gain some understanding of children's awareness and monitoring of their cognitive processes during social problem solving events, and to examine the ways in which children demonstrate independence in social skill and strategy use. Therefore, children were presented with vignettes of intra- and interpersonal conflict situations wherein protocol analyses were then applied to the "think aloud" verbalizations that were elicited. As an alternative method for evaluating or measuring social competence, the Part II investigation permitted the examination of social behaviors not directly observable.

In Part II, children listened to short vignettes that portrayed same-aged peers in problematic situations. Each child was instructed to assume the role of the main character and then tell what he or she was thinking and what he or she would do in solving each problem. No assistance with the interpretation of the problem situation was offered so as not to interfere with the child's thinking processes. Likewise, responses were not verified with participants so as not to contaminate or influence the original meanings as expressed by each child. Participants seldom strayed from the interview prompt. In the few instances where this occurred, children were redirected with a simple nonverbal prompt or with "tell what you are thinking and what you do."

Each child in the treatment group was presented with two opportunities to resolve the particular vignette theme: at the pre-intervention interview (PRI) and at the post-intervention interview (PSI). This process resulted in a total of 280 verbal protocols to be examined. An initial review of all protocols was conducted through several readings to obtain a sense of the overall data. Early analysis involved a "sorting out" of data by formulating reflective notes on each protocol. Protocols were then segmented on the prior assumption that segments could be encoded as one of a list of actions or attitudes as identified in the initial readings. This list also included behaviors or processes identified by the research as metacognitive in nature, for example, "revise strategy for a better alternative." As the encoding unfolded, categories of actions or attitudes and general themes emerged and were further refined. Once the vignettes were segmented, categorized, and themes identified, the vignettes were examined a final time.

To establish reliability of the protocol analysis, the vignette protocols were presented to an independent encoder. This person was a school psychologist and shared similar background and training with this researcher. Fifty-six randomly selected vignettes were analyzed by the independent encoder and comparisons with the initial analyses were made. Because the protocol segments were fairly unambiguous and categories clearly defined (reducing error due to incorrect inference and bias), there were few discrepancies between the independent encodings, with 96% agreement being achieved. Discrepancies that did occur were clarified upon review of the protocol itself or upon review of the category definition. Finally, a count or tally of categorical actions and/or attitudes was tabulated. Figure 6 depicts the categories and themes that evolved from the protocol analysis.

It is important to acknowledge the interests of this researcher and the theoretical framework brought to Part II of this study. That is, the influences of metacognitive theory, attribution theory and coping theory helped to make sense of the vignette interview data and helped to shape the final interpretation.

Metacognition in Solving Social Problems

Self-Monitoring, Self-Regulation and Self-Control

It was expected that children might use a number and a variety of metacognitive strategies in responding to the social conflicts presented in Part II of this research. This

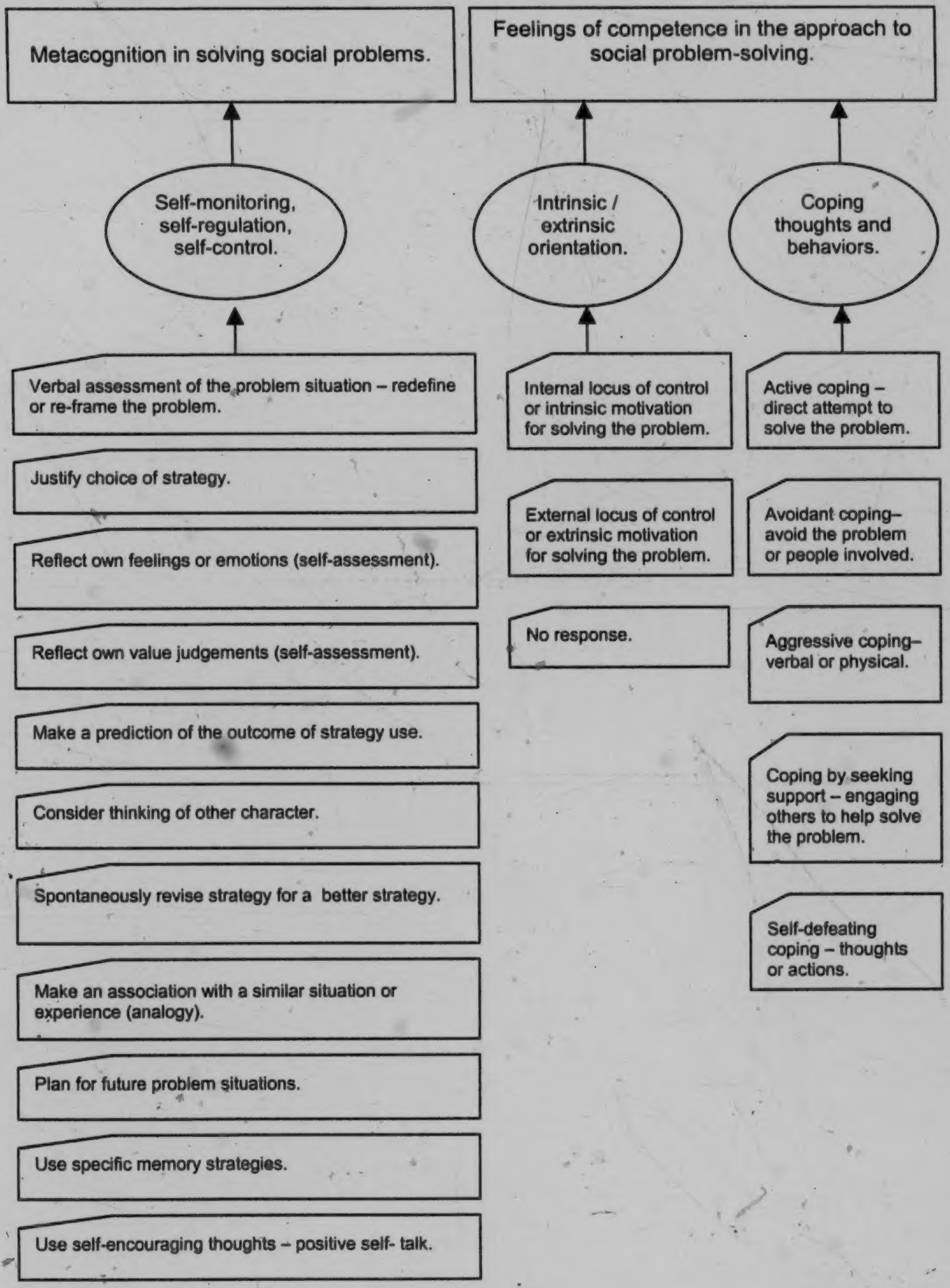
Metacognition in solving social problems.
Feelings of competence in the approach to social problem-solving.
Self-monitoring, self-regulation, self-control.
Intrinsic / extrinsic orientation.
Coping thoughts and behaviors.
Verbal assessment of the problem situation – redefine or re-frame the problem.
Justify choice of strategy.
Reflect own feelings or emotions (self-assessment).
Reflect own value judgements (self-assessment).
Make a prediction of the outcome of strategy use.
Consider thinking of other character.
Spontaneously revise strategy for a better strategy.
Make an association with a similar situation or experience (analogy).
Plan for future problem situations.
Use specific memory strategies.
Use self-encouraging thoughts – positive self- talk.
Internal locus of control or intrinsic motivation for solving the problem.
External locus of control or extrinsic motivation for solving the problem.
No response.
Active coping – direct attempt to solve the problem.
Avoidant coping– avoid the problem or people involved.
Aggressive coping– verbal or physical.
Coping by seeking support – engaging others to help solve the problem.
Self-defeating coping – thoughts or actions.

Figure 6. Evolution of categories and themes drawn from "think-aloud" protocols.

is because social problem solving is influenced by the child's interpretation of any given problem, the emotions or affect surrounding that problem, and the previous metacognitive experiences and social skills that the child might bring to bear upon the problem's solution. It was decided that a total count or tally of metacognitive behaviors as verbalized by children in their interview responses would better describe metacognitive performance during problem solving and would be more ecologically valid, than any count or tally by specific category of metacognitive behavior. It was found that the total number of metacognitive behaviors identified in the children's response protocols increased by 36% from PRIs (183 incidents) to PSIs (248 incidents). In addition, all vignette pairs saw an increase in the total number of metacognitive behaviors, from PRIs to PSIs.

Eleven categories of metacognitive behaviors were identified during protocol analysis (see Figure 7) and were validated as "metacognitive" through a review of the literature on metacognition. One such category involved the participant redefining or reframing the presenting problem or conflict, to gain a more comprehensive assessment and understanding of elements of the problem that might be important. In the PRIs, 23% of responses contained attempts to redefine or reframe the presenting problem, whereas in PSIs, 34% contained references to the same. For example,

> ...well, maybe I should have studied more. Maybe I should have asked for help and asked my parents if they could help me with the study (in response to having to complete a challenging academic task).
>
> ...why would my friends just abandon me or abandon me for the day or something like that, but probably they're just waiting for a surprise party (in response to being isolated by the peer group).

More children in the PRIs reflected upon their own feelings in the role of the main character in the vignettes (30%), than occurred in the PSIs (23%). One child responded, "...I would be kind of sad, but I would go and do it". However, in response to being isolated by the peer group, one child in a PSI sought understanding from the peer group

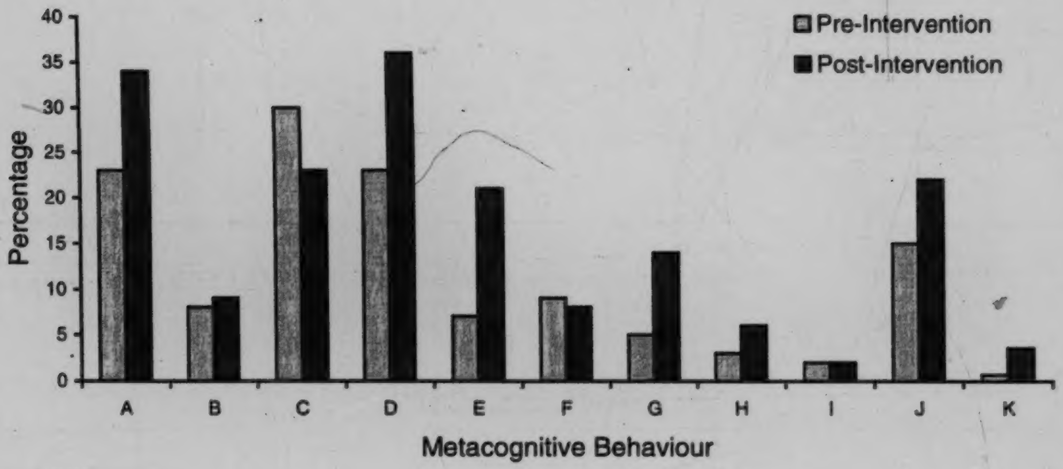

Figure 7. Percentage of children's responses portraying various metacognitive behaviors: A – Redefine or reframe the problem. B – Justify choice of strategy. C – Self-assessment of feelings or emotions. D – Self-assessment of value judgements. E – Predict outcome of strategy use. F – Consider thinking of others. G – Revise strategy. H – Plan for future problem situations. I – Use specific memory strategies. J – Positive self-talk. K – Analogy.

by disclosing what he was feeling. This was not observed in any of the PRIs.

There was an increase from PRIs (23%) to PSIs (36%) in the number of children that reflected upon their own value judgements. For example,

> ...it wouldn't be fair to Beth...and they're not really true friends if they want me to not be friends with Beth (in response to peer pressure).

In responding to the problems presented, children used words about themselves or their situations that were positive and self-encouraging. In some cases, children spontaneously replaced self-defeating thoughts by positive self-talk, or they verbalized positive alternative explanations. Overall, there was an increase in such positivity from PRIs to PSIs (from 15% to 22%). Some examples of responses that were expressed by children included:

> ...I would get my chores done right away, as fast as possible, then I could be off with my friends. I wouldn't have to worry about them later (in response to neglect of chores).
>
> Well, if I studied really hard, it wouldn't really matter...if I knew that I had studied (in response to having to complete a challenging academic task).
>
> I should've looked on the other person's test, but...but I did study hard and stuff like that, so... I did good (in response to being disappointed by one's own performance).

In response to a vignette of being isolated by the peer group, three children in the PSIs verbalized positive thoughts about themselves despite rejection, while this was not observed in the PRIs.

> I'm just as well as everybody else...I'm a normal person too...you can invite me too...

Some children verbally justified their choices of problem solving strategies, with such explanations occurring fairly consistently from PRIs to PSIs, at 8% and 9% respectively.

There was an increase from PRIs to PSIs in the number of children that made predictions of the outcomes of the strategies they chose to resolve problem situations (7% and 21% respectively). For example:

> ...if I don't egg the house...I won't be able to go in the club, but if I do, I'll be hurting the little boy's feelings and like making parents angry...(in response to being pressured by a peer group to act in an irresponsible manner).
>
> I'd do the ones that I do know and after a while, the answers probably would come to my head and then I'll do them (in response to having to complete a challenging academic task).

Some of the children talked about what they could do if the problem presented itself again in the future, or about how they might avoid such a problem in the future.

This was prevalent in 3% of the PRIs and in 6% of the PSIs. Some words used to describe this planful behavior included:

> ...but I should always keep my room tidy. The next time, I won't have to clean up my room, it will already be clean (in response to being challenged on neglect of chores).

> ...I should probably like, not try to memorize them like, try to study more (in response to having to complete a challenging academic task).

Some children considered how other characters in the vignettes might be thinking. This was observed in 9% of the PRIs and in 8% of the PSIs. One child expressed: "...like maybe the girl didn't realize she cut in line or something..." (in response to a peer conflict situation).

There was an increase overall in the number of children that spontaneously revised their thinking about their strategies, with 5% doing so in PRIs and 14% doing so in PSIs. Responses included:

> I guess I just take it back. I'd say I'd probably let him see it first (in response to a peer conflict).

> ...give me a half an hour time off and go play with my friends and come back and finish my chores in the yard. Or if I want to get it all done at once, I can stay home and get it done and then have the rest of the day for myself (in response to a task requiring persistence).

Several children talked about similar previous experiences and drew analogies that were able to assist with solutions to the presenting problems. This saw an increase from PRIs to PSIs, of 1 to 5 instances. While these numbers are not high, the behavior indicates that the children acknowledged similar elements in both problem situations and were aware of the transfer of previous knowledge. Some responses included:

> ...and I got a best friend and she moved away last year...(in response to meeting new peers).

> Well, it was sort of like my Social Studies test. I couldn't remember the questions, but I put down as much as I could remember...(in response to having to complete a challenging academic task).

The number of students verbalizing specific memory strategies was consistent from PRIs to PSIs at 2%. Examples included:

> I should think back [to] what I was studying and what the paper looked like and that... (in response to having to complete a challenging academic task).

Competence in the Approach to Social Problem Solving

Locus of Control

The vignettes described seven possible problem situations that might induce some interpersonal or internal conflict in the child. Again, as expected, each child's response was unique with respect to such factors as the reading of social cues, approach to the problem, past experiences, emotional reactions, and other factors. As each child's response was considered, it became clear that children were attributing responsibility and control for the problem solutions to themselves (internal), or they felt unable to control the problem situation on their own (attributing potential for solving the problem to external forces). An example of the latter included:

> I would go over and tell the guy that she cut in line (in response to a conflict situation with a peer).

In some cases, children offered no solution to problem situations, responding with, "I don't know. Nothing!"

In other instances, children expressed intrinsic motivation for problem solving, in other words, there existed reasons intrinsic to the child for wanting to find a way to solve the problem. Conversely, other children generated problem solutions for reasons extrinsic to themselves (to please others, to avoid punishment). An example of the latter follows:

> I say to myself that my mother is grouchy and I decide to pick it up to make her feel better (in response to being challenged by a chore that requires persistence).
>
> ...I ain't doing it...I can get into a lot of trouble with that little boy's parents (in response to being pressured by a peer group to act in an irresponsible manner).

Across all responses provided by the participating children, 50% of responses in the PRIs reflected an internal locus of control or intrinsic motivation for finding a solution to problems, whereas this percentage increased in the PSIs to 66%. As expected, there was a corresponding shift of number of responses that clearly indicated an external locus of control or extrinsic motivation, with a decrease from 44% to 29% from PRIs to PSIs. Also, there was a very slight decrease in the number of children who offered no response (from 3% in PRIs to 2% in PSIs). Overall, there appeared to be a trend toward increased intrinsic control and orientation (see Figure 8 for a visual representation of this trend).

In response to a specific vignette situation wherein the child was faced with a daunting academic task, the vast majority of participating children recognized that they would need to draw upon internal resources in order to resolve this problem. Yet, 40% of children in the PRIs externalized the problem, placing the responsibility for solving the problem with another person or situation. For example,

> ...I won't get a very high mark because I don't know a thing and I probably won't be friends with the girl any more because she didn't try to help.

Subsequently, the percentage of children externalizing responsibility for resolving this challenging academic conflict decreased in the PSIs to 25%.

In vignettes that required the children to overcome shyness in order to approach same-aged but unfamiliar peers, there was an increase in the number of responses that indicated an internal orientation or intrinsic motivation for doing so (from 55% in PRIs to 70% in PSIs).

Coping Thoughts and Behaviors

Active coping is considered an optimistic attempt to directly solve a problem or make the problem situation better. There was an increase in the number of children who actively coped with the problem situations presented in the vignettes, when

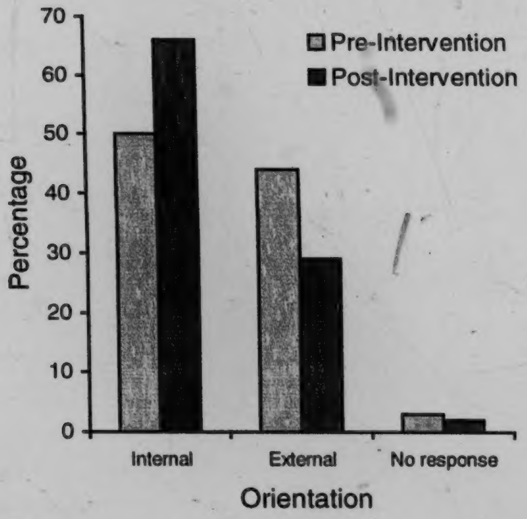

Figure 8. Percentage of children's responses that indicate internal, external or no response orientations toward problem solving.

PRIs and PSIs were compared (from 52% to 68%). (See Figure 9 for a visual representation of coping responses.) In vignettes where the main character was deliberately isolated by the peer group, some children dealt with feelings of rejection with direct action,

> ...after a while, I might go to my friends and see if they would want me to come along too.

by seeking understanding,

> I think 'why won't they invite me? Is there something wrong?'

and by being optimistic,

> ...they probably will invite me to the next sleepover, which probably isn't that long from now...

There was a slight decrease in the number of children who tended to be avoidant of problem situations, or avoidant of people associated with the problems, from the PRIs

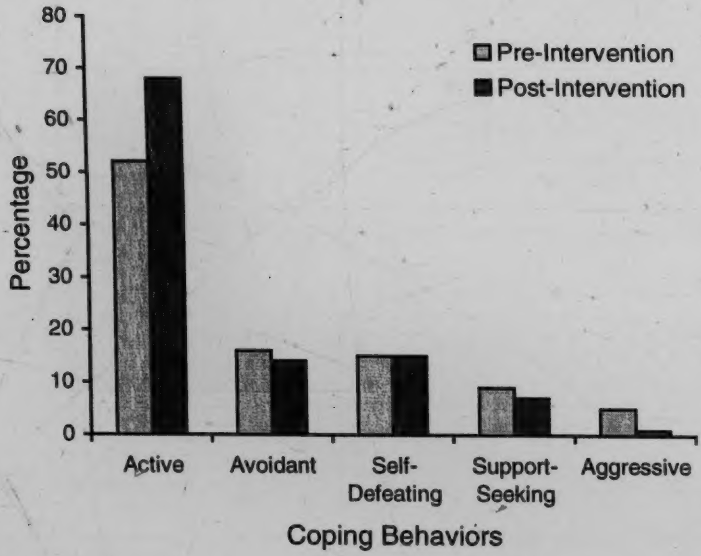

Figure 9. Percentage of children indicating active, avoidant, self-defeating, support-seeking or aggressive responses to problem situations.

to PSIs (from 16% to 14%). As might be expected, children were most avoidant of situations that involved isolation or rejection by the peer group although, again, this was less significant in the PSIs (10 versus 7 avoidant responses from PRIs to PSIs).

One pair of vignettes involved peer pressure to act irresponsibly, in order to be included in the peer group. Two children in the PRIs avoided confronting that peer pressure and instead, indicated that they would choose to act irresponsibly. One such response follows:

> ...well then I guess I do throw eggs at the house cause like maybe I want to go to the group, too. But first, I say no because buddy said if you want to stay into the group, then you have to egg the house. And then I say, 'okay then'. Then, I join the group after.

No children bowed to peer pressure in the PSIs.

Conversely, more children tried to avoid taking responsibility for chores in the PSIs than in the PRIs, often negotiating for a lesser task:

> ...I could probably tell him that I find that the chores are too hard and too long. I want to go somewhere with my friends, so he'll probably shorten up the chores.

Across the seven pairs of vignettes, instances of seeking support from others to assist with problem solving saw a slight decrease from PRIs to PSIs (from 9% to 7%). Children sought support from teachers,

> I should tell the teacher that he took it...(in response to a potential conflict situation with a peer).

from friends,

> I would call a friend to come help me if they wanted to and I'd clean my room (in response to neglect of chores).

from family,

> ...when I go home, I got to do it all by myself or I can get my mom to do it...help me with it, or dad, or one of my older sisters or brothers...(in response to having to complete a challenging academic task).

and others,

> ...I should go off and tell the person who owns the house that they're going to throw eggs at it (in response to being pressured by a peer group to act in an irresponsible manner).

Aggressive responses, which included both verbal and physical aggression in problem-solving, decreased from 5% (seven instances) in PRIs to 1% (two instances) in PSIs. While this number appears statistically insignificant, any reduction in aggression might be considered clinically meaningful. Two children in the PRIs proposed physical aggression to deal with potential conflict:

> ...Fight. I think that's all.
>
> ...I'm not happy and I want to fight and that's all.

In the PSIs, however, no instances of physical aggression were recorded.

Some of the participating children reported thoughts and actions in their problem solving that tended to be self-defeating. Observations of such behavior remained consistent across PRIs and PSIs at 15%. From PRIs to PSIs, children continued to presuppose negative feelings or intentions on the part of the peer group in response to being isolated or rejected, explaining that they weren't "liked" or that the peer group intended "to be mean." One example of a self-defeating verbalization in response to a challenging academic task was:

> ...I cannot do them...and I'm going to fail.

In response to being disappointed in one's own performance, children verbalized:

> I probably think I'm a loser.
>
> ...I'll probably go and hide so no one will find me.

In response to feeling too shy to meet a new friend, one child worried that he would not be liked:

> ...what if he doesn't like me? He'll probably get mad at me.

Response Time and Length

There was no significant difference between PRI and PSI protocols in the time that it took children to respond to vignettes (mean of 5.4 seconds and 3.7 seconds respectively) or in the number of words used in children's responses (mean of 30 words and 33 words respectively).

Part III Analysis

Teacher Perceptions

The purpose of the Teacher Questionnaire was to determine teachers' perceptions of the intervention with respect to training, implementation, parent and student reactions, and student attitude and behavior change (See Appendix D for Teacher Questionnaire and Teacher Questionnaire Results). The 17- item questionnaire was distributed to the teachers in the experimental group near the end of the school year, June 2000. Respondents were anonymous, but included the special education teacher and a temporary teacher in a replacement position. Because this replacement occurred midway through the intervention, the replacement teacher did not receive the initial training. Therefore, some response data disclosed by this teacher could not be included in the present analysis, even though collaborative support in the SPELT instructional approach had been provided to this replacement teacher throughout the replacement period. Seven teachers from kindergarten to grade seven responded to the questionnaire.

Teachers were asked to identify the lessons of Program Achieve that had been covered in class. Teachers reported that more 85% of the lessons had been taught, with an additional 9% of the lessons being partially completed. Five percent of the lessons had not been covered due to time constraints.

Four of six teachers agreed that the two-day training in the SPELT instructional approach had been adequate for implementation. Two teachers felt that the initial training period was not adequate.

The recommendation for teaching Program Achieve involved the introduction of new social skill concepts at a rate of two per week. Eighty-three percent (five of six teachers) felt that two class periods per week were not sufficient to implement a social skills curriculum and would have preferred an increase of one or two class periods per week. One teacher felt that social skills instruction should occur on a daily basis.

Teachers had been trained to apply the SPELT instructional approach to the social skills curriculum, Program Achieve, as well as to other subject areas across the regular curriculum to facilitate generalization of learning and thinking. All teachers applied SPELT to other subject areas, including Religion, Social Studies and Language Arts. One teacher specifically reported using the approach in all areas of the curriculum.

All teachers reported that students reacted positively toward the intervention and particularly enjoyed the social activities and discussions. Two teachers acknowledged that some children in their classrooms preferred to be less involved in some activities. One teacher felt that the concepts were too difficult for children with significant learning needs.

Eighty percent of teachers reported positive changes in students' attitudes and behaviors since implementing the intervention. Teachers observed that students took more responsibility for their actions, showed more consideration and acceptance of others, were more efficient at problem-solving, shared more feelings, and prompted positive behavior in each other more often. One teacher felt that students who had been hesitant to participate in classroom activities demonstrated fewer positive changes in attitude and behavior.

Eighty-three percent (five of six teachers) observed students using the social skills and strategies outside of the learning setting. One teacher made particular note of children's enhanced friendship skills.

Interestingly, teachers differed in their opinions about the skills and strategies that they felt had been most helpful to students. These included making friends, problem-solving and predicting positive outcomes, self-confidence, and handling conflicts. One teacher felt that some children were more motivated than others to "try to improve" and those children therefore used more of the strategies.

Although parents had been provided information on several occasions regarding this intervention, no feedback was elicited from parents. Teachers reported that parents did not come forward of their own accord to ask questions or to offer accounts of noticeable changes in their children's behaviors or attitudes.

Four of six teachers felt they would be interested in implementing social skills and strategies training through the SPELT approach in the future and would recommend it to other teachers. One teacher felt the intervention was difficult to implement with children of significant special needs. One teacher felt uncertain as to future use or personal recommendation.

All teachers agreed that they would continue to use a SPELT approach in future instruction. All teachers felt the program should be implemented at all grade levels and in all classrooms.

All teachers felt that positive changes were observed in students in the area of emotional well-being and specifically, confidence. A majority of teachers felt that positive changes were also observed in: getting started with work, working cooperatively with others, ability and readiness to cope with more difficult tasks, attention span and time on task, ability to accept criticism, effort, interactions with peers, and accepting mistakes. Forty-three percent of teachers reported positive changes in their students with respect to academic performance, understanding emotion, and handling interpersonal conflicts.

Additional comments were offered by several teachers. These included concern about the time required to implement such an intervention under heavy academic demands. Again, one teacher acknowledged the accommodation of special needs students.

Summary of Results

This study explored the potential of a metacognitive instructional approach to impact upon factors that contribute to social competence and to the ability to cope with stress, in elementary-aged school children. The following results emerged from these research questions:

1. Is there a change in elementary school children's self-perceptions of competence, locus of control and coping behaviors, following metacognitive instruction in social skills and strategies?

Analysis of PCSC data found no significant effects of metacognitive instruction on cognitive competence, social competence, physical competence or general competence. Analysis of CCSC-R1 data found significant negative effects of metacognitive instruction on active and avoidant coping strategies, however no significant effects were indicated on support seeking or distraction coping dispositions. Analysis of IARQ data indicated a significant positive effect of metacognitive instruction on internal locus of control. The IARQ data implied either a real change in locus of control or possible regression of post-test scores toward the mean. The former premise was supported by data from Part II and Part III of the research results and shall be given further discussion in the next chapter.

2. How does a metacognitive approach to teaching social skills and strategies influence social problem solving behavior in elementary school children?

In Part II, vignette think-aloud responses from pre-intervention and post-intervention interviews with experimental group participants were analyzed through protocol analysis. This analysis found that the number of metacognitive behaviors identified in PRIs increased following metacognitive instruction. Also, problem solving responses that reflected an internal orientation or intrinsic motivation for conflict resolution saw an increase from PRIs to PSIs. Finally, think-aloud responses that reflected active coping increased, while avoidant, support seeking and aggressive coping responses saw modest decreases following metacognitive instruction. Because in Part II, no control group comparisons were made, no firm conclusions can be drawn from the vignette interviews regarding the effects of this intervention. Nevertheless, these interviews were not intended to produce an absolute indication of intervention effects, but rather complement other measures.

3. What are the opinions and perceptions of the teachers involved in metacognitive instruction of social skills and strategies, with respect to prior training,

implementation, parent and student reaction, and student attitude and behavior change?

Teachers in the experimental group demonstrated commitment to the intervention by presenting to students approximately 95% of the social skill and social strategy knowledge. Two-thirds of the teachers felt that prior training to implement the intervention had been adequate. All teachers were very interested in continuing the intervention with the exception of a teacher who felt unsure. One teacher expressed feeling challenged to intervene with children with severe learning delays. Eighty-three percent of teachers felt that the instructional time allotted was still not sufficient to address social competence.

All teachers reported application of the SPELT approach to other areas of the curriculum. All teachers indicated that they would continue to use this approach in the future and that implementation should be at all grade levels and across the curriculum. The majority of teachers felt that students reacted positively toward the intervention. All teachers noted positive changes in students across a range of social behaviors and attitudes, particularly in the area of confidence, and 83% of those responding indicated they had observed students using the strategies from the classroom, outside of the learning setting. Teachers varied in their anecdotal accounts of the strategies they felt were most helpful to students. Although parents were provided information regarding the intervention, none questioned implementation, progress, or offered comment on the same.

CHAPTER 6 – CONCLUSIONS

Discussion

Recognizing the need to consider multiple methods of evaluation in assessing the effects of metacognitive instruction on aspects of social competence, three investigative methods were utilized (see Part I to Part III). Two findings were consistently supported by these three analyses. They are: (a) significant positive effects of the intervention on internal locus of control, and (b) significant negative effects of the intervention on avoidant coping behaviors.

An intrinsic or internal locus of control describes the child's inclination to attribute the outcomes of his or her own performance to internal factors such as ability, effort, skill or strategy. Analysis of the IARQ data found significant increases in internal locus of control for the experimental group, with decreases reported for the control group. While this effect might be explained by a regression of post-test scores toward the mean, an examination of Part II and Part III data suggests otherwise. In Part II of this research wherein children responded to social conflict situations, an increase in intrinsic orientation to problem solving was observed from PRIs to PSIs for those children in the experimental group. That is, children demonstrated intrinsic locus of control or intrinsic motivation more often in their PSI verbalizations. Likewise in Part III, a majority of teachers from the experimental group reported positive changes in their students at post-intervention in the areas of self-confidence, effort, acceptance of mistakes, and transfer of skills and strategies learned in the classroom to non-classroom settings – observations that reflect personal responsibility for outcomes of behavior. In fact, one teacher described children as "taking more responsibility for their own actions." Overall, increased internal locus of control was reported in both academic and nonacademic domains.

It is generally accepted in the research that children are more resilient to stress when they employ active coping strategies that involve positive thinking and problem-solving, rather than avoiding problems or avoiding actions required to solve problems (Ayers, 1991; Compas et al., 1988; Sandler, Pitts, et al., 1995; Sandler, Tein, et al., 1994). Four dimensions of coping were examined by the CCSC-R1 in Part I of this study - active, avoidant, support-seeking and distraction coping. A significant negative change in avoidant coping was observed for the experimental group following metacognitive instruction in social skills and strategies. That is, children in the experimental group reported significantly fewer actions to avoid problems or to avoid thinking about problems, when compared to the control group. Corroborated by Part II results, when children in the experimental group were presented with social conflicts to resolve, their verbalizations described fewer avoidant responses in PSIs, than in PRIs. Likewise, in Part III, a majority of teachers reported that the children in the experimental group demonstrated increased "ability and readiness to cope with more difficult tasks" at post-intervention.

An observation that also proved to be significant in Part I was the decrease in self-reported active coping strategies for the experimental group children, as indicated by the CCSC-R1. This observation appeared perplexing, given that active coping responses were verbalized more often by children in the experimental group during the post-intervention interviews (Part II) and, as previously noted, teachers described these children as more able and ready to cope with more difficult tasks at post-intervention (Part III). One explanation for these seemingly contradicting observations became apparent when the "active coping" items of the CCSC-R1 were examined. That is, 24 of the 28 items that comprise the active coping domain of the CCSC-R1 involve either thinking about the problem solution or self-talk, while the four remaining items describe direct actions to cope with a problem. Children in the experimental group appear to have acknowledged significantly less effort in "thinking" and "self-talk", whereas less effort to directly "act" to solve problems is a distinction not necessarily captured by the total active coping score because of too few items to conclude such. The distinction would, in this case, be very important as these CCSC-RI active coping results could, in fact, exemplify the ultimate goal of SPELT's Phase III – automaticity of strategy use. That is, from a level of automaticity, children might not consciously expend effort in deliberating before executing the strategies. Moreover, this possibility might be considered very plausible given that the children in the experimental group reported significantly increased self-perceptions of personal control and responsibility for their own problem solving efforts, as well as significantly decreased tendencies to avoid problems (as previously discussed in Parts I, II and III of results).

There were no significant changes in distraction coping or support-seeking coping when CCSC-R1 means were compared in Part I, suggesting that children in the experimental group did not employ and report these coping dispositions significantly more or less than control group children following the intervention.

A finding of particular interest in the Part II research results involved the experimental group children verbalizing physical aggression and submission to peer pressure in resolving conflicts during the PRIs, whereas such verbal reports were non-existent in the PSIs. While these observations lack statistical significance, the clinical significance of such observations can be important in real life situations. Teachers' perceptions at post-intervention concurred with these positive changes in children's interactions with peers, as reported by the majority of teachers in the experimental group (Part III).

Following metacognitive instruction, no significant changes in cognitive competence, social competence, physical competence or general competence were observed on analysis of PCSC self-report data (Part I). It is possible that the duration of intervention was too brief to fortify such self-perceptions. Despite this finding, the majority of teachers from the experimental group reported positive changes in children's self-confidence, in getting started with work, working cooperatively with others, in readiness to cope with more difficult tasks, effort, persistence, ability to accept criticism, acceptance of mistakes, and in interactions with peers. Also, teachers observed that children were transferring skills and strategies learned to settings outside of the classroom, suggesting that children appeared competent to employ such actions. In Part II of this research, as experimental group children responded to social problem situations, the overall increase in metacognitive behaviors observed from PRIs to PSIs suggested an increased level of self-regulation, further suggestive of increased competence within the social domain.

The increase in the number of metacognitive strategies evident in the experimental group's response protocols from PRIs to PSIs in Part II supports teachers' perceptions of positive change in children's ability to actively and independently generalize and adapt social skills and strategies to situations outside of the learning setting. The most notable increases in metacognitive behaviors as observed in Part II included: (a) redefining or reframing the problem situation for additional assessment and increased comprehension of the problem, (b) self-assessment of value judgements, (c) predictions of strategy use, (d) revisions of strategies, and (e) positive self-talk.

In Part III, the majority of teachers in the experimental group indicated that more class time should be allocated to social skill development, recognizing the importance of social competence. A majority of teachers felt that training had been adequate and a majority was able to apply the SPELT approach to several areas of the curriculum, as well as to social skills. Likewise, a majority of teachers felt that the intervention should be applied to all grade levels and in all classrooms, recognizing that accommodations or adaptations would be required for some special needs populations.

All regular classroom teachers felt that student reactions to the intervention were positive. All teachers noted a positive change in student behavior and attitude, with the majority reporting positive effects on students' self-confidence, coping skills, work habits, cooperation, acceptance of criticism and mistakes, and emotional well-being. Moreover, teachers noted that students transferred skills from the classroom to other settings. A majority of teachers felt they would continue to use the intervention in the future and would recommend it to other teachers. All teachers agreed that they would continue to use the SPELT approach in future instruction. Parent perceptions were not elicited and none were volunteered to teachers during the course of the intervention.

Implications for Intervention

The results of this research lend support to the implementation of a metacognitive classroom approach to instruction in social competence – a systematic and holistic intervention aimed at social development in children. It has been demonstrated that such intervention with elementary-aged children significantly decreased avoidance of problem situations and significantly increased personal responsibility in problem solving. There is also some evidence that children demonstrated increased self-awareness, self-monitoring and self-control in social problem solving following metacognitive instruction, as well as increased employment of direct actions to cope with social problems. Teachers demonstrated commitment to the intervention and indicated that the children were more competent in emotional, behavioral and cognitive domains following metacognitive instruction, despite the fact that children did not perceive significant changes in competence over the same period. Further intervention than was provided by this research might nourish such self-perceptions in the longer term. Evidence for transfer and generalization of social skills and strategies following metacognitive instruction was found in interviews with the children and in teacher reports.

Of critical importance to the success of this intervention was the role of participating teachers, the crucial question being: was the intervention implemented as intended? That teachers in the experimental group played some part in the decision to adopt the intervention speaks to teacher commitment to social competence and to the implementation of this research. Evidence that teachers maintained a level of enthusiasm for and compliance with the intervention was found at regular intervals throughout the intervention period. Longer-term commitment was also expressed by teachers at post-intervention - a commitment that could possibly result in even more persuasive effects than reported in this study, as well as maintenance of effects, over the longer term.

However, it was recognized that teachers require extensive support in order to maintain commitment and persistence over the course of an intervention as in this current research. This includes support for the initial implementation, which is likely to be somewhat mechanical as teachers learn the elements of the metacognitive approach in order to present it successfully to students. It is also important to acknowledge the effort involved when teachers attempt to integrate metacognitive principles into their own behavior, particularly within the domain of social competence. Teachers need to be functioning at high cognitive and affective levels to serve as appropriate role models for strategic behavior, emotional tone and self-control (Manning & Payne, 1993), and it makes sense that students are unlikely to use strategies extensively until their teachers do so. Finally, the most crucial social lessons often occur outside of the learning setting and, therefore, teacher commitment to modeling strategic behavior across all settings – structured or unstructured - is of utmost importance.

Recommendations for additional teacher support include: (a) administrators and guidance counsellors setting the tone, (b) booster sessions, (c) visual prompts in the staff rooms, classrooms and school, (d) mini workshops that improve upon adults' social skills (for example, effective listening and conflict resolution), and (e) opportunities for teachers to observe each other or to co-teach.

Implications for Research

All social outcome measures have inherent limitations and biases. For example, while direct observation is useful to report behavior as it actually occurs in the natural environment, aberrant behavior is far less common when a direct observer is present. When the direct observer is the teacher in the classroom, the teacher often becomes aware of aggressive behavior, for example, only when it is reported. Also, subtle changes in student behavior may be difficult for the teacher to detect above regular classroom activity. Individual interviews may be one way to assess social competence, for example, to determine whether students are knowledgeable about strategies and strategic behavior, but interviews may provide retrospective data rather than describe actual behavior. Control group comparisons are important because they attempt to eliminate the possibility that changes observed are simply the result of normal development. However, positive changes in behavior may not be the true indicator of a successful social intervention because such interventions may instead keep behavior from deteriorating. Finally, while the validity of some self-report measures may not be well established, self-report may still serve as one component of the larger question of the quality of the social intervention. Ultimately, it is wise to use a combination of measures for evaluating the effects of any intervention in social competence..

Teachers in the experimental group of this research demonstrated a high level of commitment to metacognitive instruction and to social competence in children, however, this commitment was not assessed over the subsequent school year. Likewise, the retention of positive changes attributed to the intervention was not assessed beyond post-intervention measures. Longer-term research may provide insight into these queries.

It is important to acknowledge that social competence cannot be nurtured solely in the classroom and that parents and caregivers play a critical role as the primary teachers and role models for their children. Further research involving a parent training component may be appropriate.

Teachers in the experimental group responded positively to training in the metacognitive instructional approach, namely SPELT. Teachers did require a good deal of support during initial implementation and several remarked that such training should occur at the university level, before teachers become "stuck in their ways." Indeed, if we want teaching to occur at higher cognitive and affective levels, teacher training in metacognitive skills must be provided by our universities (Manning & Payne, 1993).

Limitations of the Research

1. The variables of culture and context must be considered in social competence research. The strategies taught and instruments used in this research reflected generally accepted attitudes and behaviors within Canadian culture. Cultural diversity in the populations studied was limited. In this research, gender was not considered with respect to cultural trends, social expectations and social acceptance of behaviors, although such trends are acknowledged. The effects of the intervention were emphasized at the school level only. Further research may be helpful to investigate differential effects of the intervention by gender, grade, ability or achievement.
2. In Part I, significant effects were not observed on measures of self-perceptions of competence (PCSC). It may be that a longer intervention period would have effected positive changes in self-perceptions of competence.
3. In Part II of the research, interviews were conducted with a sample of students in the experimental group. While interview responses suggested increases in strategic behavior, active coping and internal orientation to problem-solving following

metacognitive instruction, because no control group comparisons were conducted, no firm conclusions can be drawn attributing the changes to that intervention.

4. Students in grades 4 to 7 completed self-report inventories to provide data to Part I of this research. A sample of grades 4 and 5 students participated in vignette interviews in Part II of the research. Results obtained from Parts I and II cannot necessarily be generalized to other grade levels.

5. Some caution must be taken in assuming the generalizability of the significant effects observed in Part I for the dependent variables, internal locus of control and avoidant coping. Differences between the control and experimental groups on the pre-test suggest that one or both groups may not be truly representative of the general population, further suggesting that the intervention might be better suited to some populations than others. However, contradicting these suggestions, teachers involved in this intervention saw value in implementation for children at all grade levels, across the curriculum and to be provided more intensively on a daily basis.

..."no one ever solves a problem alone, but rather solves it in light of knowledge of cognitive operations learned from and with others" (Pressley, 1995, p.210).

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APPENDIX A

Information letter to parents / guardians and Consent for Participation form for children in the control and experimental groups.

7

Dear Parent(s) or Guardian(s)

A research project entitled The Effects of a Metacognitive Instructional Approach to Social Competence on Children's Self-Perceptions and Social Problem-Solving will be conducted in one of the schools in your district. It will not be your child's school.

However, School A will be used as the control school. What this means exactly, is that your school will be compared to the school that is participating in the research intervention. To make this comparison, several checklists will be administered to children in grades 4 to 7, which should take approximately one hour. These measures will be taken at the beginning of January and again near the middle of June.

Information about children that is obtained through this research project becomes the property of the researcher and will be kept confidential. Children will be assigned numbers; names will not be used in the interpretation of data to ensure that children remain anonymous within the context of the research project. The information collected by the researcher will have no impact on your child's grades at school or how your child will be treated. Your or your child's agreement to participate may be withdrawn at any time.

A summary of the results of the group analysis will be made available in September and any inquiries concerning such can be made at the school at that time.

Please complete the attached consent form to indicate permission for your child to participate in the control group. Return the form unsigned if you wish to withhold consent.

Further questions or concerns can be addressed by your Principal or by this researcher.

Sincerely

Darlene Styles, M.Ed.
Graduate Student at the University of Alberta

CONSENT FOR PARTICIPATION

I, ______________________________, hereby give my

consent for my child ______________________________ to participate in the

control group measures as part of the research project entitled "The Effects of a Metacognitive Instructional Approach to Social Competence on Children's Self-Perceptions and Social Problem-Solving". I understand that the intervention part of this project will be taking place in another school in the district.

I understand that such consent means that in January and again in June, approximately sixty to ninety minutes of class time will be required to carry out the gathering of information. I understand that my child will be asked questions regarding his or her attitudes and problem-solving strategies within the context of emotional and social skills.

I understand that individual information regarding my child will not be shared with the school without my consent and will be kept confidential. I understand that a summary of the group results will be shared with the school and can be obtained by myself in September. I understand that I am able to discuss my child's results with Darlene Styles should I wish to do so.

I understand that agreement to participate may be withdrawn at any time without consequence.

____
Signature of Parent(s)/Guardian(s)

____
Date

Please return this form with or without your consent to your child's teacher.

Dear Parent(s) or Guardian(s),

At the beginning of January, teachers at School B will be introducing to students a new subject area that teaches children ways to be successful in school and in life. Teachers will have been trained to deliver this program within a thinking/learning strategies approach called SPELT, which has been shown to enhance the child's ability to think and to solve problems for himself or herself, both at school and at home.

The effects of this new program will be evaluated as part of a doctoral research project conducted by Darlene Styles, entitled The Effects of a Metacognitive Instructional Approach to Social Competence on Children's Self-Perceptions and Social Problem-Solving. The research is investigating the extent to which children perceive themselves as competent and capable, and explores their problem-solving behaviour following SPELT instruction.

To obtain this information, several checklists will be administered to children in grades 4 to 7, which should take approximately one hour. Also, twenty children will be randomly chosen from grades 4 and 5, to participate in a short interview of approximately fifteen minutes, and which will be audio taped. These measures will be taken at the beginning of January and again near the middle of June.

Information about children that is obtained through this research project becomes the property of the researcher and will be kept confidential. Children will be assigned numbers; names will not be used in the interpretation of data to ensure that children remain anonymous within the context of the research project. The information collected by the researcher will have no impact on your child's grades at school or how your child will be treated. Your or your child's agreement to participate may be withdrawn at any time.

A summary of the results of the group analysis will be made available in September and any inquiries concerning such can be made at the school at that time.

Please complete the attached consent form to indicate permission for your child to participate in the research. Return the form unsigned if you wish to withhold consent.

Further questions or concerns can be addressed by your Principal, or by this researcher.

Sincerely,

Darlene Styles, M.Ed.
Graduate Student at the University of Alberta

CONSENT FOR PARTICIPATION

I, ____, hereby give my

consent for my child ___________________________________ to participate in the

research project entitled "The Effects of a Metacognitive Instructional Approach to Social Competence on Children's Self-Perceptions and Social Problem-Solving".

I understand that such consent means that in January and again in June, approximately sixty to ninety minutes of class time will be required to carry out the gathering of information. I understand that my child will be asked questions regarding his or her attitudes and problem-solving strategies within the context of emotional and social skills. I understand that this will involve audiotaping.

I understand that individual information regarding my child will not be shared with the school without my consent and will be kept confidential. I understand that a summary of the group results will be shared with the school and can be obtained by myself in September. I understand that I am able to discuss my child's results with Darlene Styles should I wish to do so.

I understand that agreement to participate may be withdrawn at any time without consequence.

____
Signature of Parent(s)/Guardian(s)

____
Date

Please return this form with or without your consent to your child's teacher.

APPENDIX B

Reminder prompts for classroom teachers.

Remember

In the direct teaching of strategies, use…

i) Motivation – make students aware that without a strategy, it would be difficult to deal proficiently with a given situation.

ii) Sell-job – use phrases such as "a better way", "efficient", "faster".

iii) Modelling – the teacher models the strategy through thinking aloud.

iv) Drill for Memorization – use verbal rehearsal to ensure that students have memorized the steps of the strategy.

v) Practice – provide opportunities for the students to practice the strategies.

vi) Feedback – provide feedback during the practice sessions, positive feedback or corrective feedback.

vii) Post-test – assess students' use of the strategy in similar problem situations and their evaluations of the strategy use.

Remember

- Metacognitive questioning rather than directing (encourage students' self-directing, self-evaluation, self-monitoring, self-correcting).
- Encourage and model outloud thinking. Rather than tell students what to think, model how to think.
- Encourage and model self-talk – the student states that he/she can be successful.
- Verbally rehearse the organization of a plan or strategy.
- Encourage and model recall of past events that might be similar in some way.
- Encourage and model visualizing the strategy as it is to be executed.
- Encourage and model self-congratulations for successful strategy use.

Remember

- How do you know there is a problem?
- How do you feel about the problem?
- Is it important to you to solve the problem?
- What are you thinking?
- What will you choose to do to solve the problem?
- How do you know to choose this strategy/plan/step?
- Is there a better way?
- Why do you choose this alternative over other strategies/plans/steps?
- Is the strategy/plan working?
- What parts of the strategy/plan might you have to change?
- What happened after the strategy/plan?
- How did you feel after you carried out the strategy/plan?
- In what other situations would you use this same strategy/plan?

APPENDIX C

Vignette Interviews.

Self-Acceptance/ Self-Esteem

As the main character, finish this story by telling what you are thinking and what you do.

Bruce has just learned to play hockey and is the new goalkeeper on his team. In front of many fans, including his friends and family, Bruce just played his first game as "goalie" and lost to a score of 7 to 0.

As Bruce, finish this story by telling what you are thinking and what you do.

____

As the main character, finish this story by telling what you are thinking and what you do.

Cathy finds school work very difficult and when it's time to write a test, she gets very anxious. During today's test, Cathy is tempted to copy a classmate's answers. She decides to do the test without copying, but then finds out that she did not pass the test.

As Cathy, finish this story by telling what you are thinking and what you do.

____

Confidence

As the main character, finish this story by telling what you are thinking and what you do.

Jackie's friend promised that she'd help with some difficult homework that is due tomorrow. Jackie's been waiting all evening for her friend to arrive, but now it looks like Jackie will have to do the homework on her own.

As Jackie, finish this story by telling what you are thinking and what you do.

____

As the main character, finish this story by telling what you are thinking and what you do.

Dale needs to get some good grades this term. He studied hard for this test and feels like he will do well. However, when the test is passed out, Dale looks at the questions and has no idea what to do.

As Dale, finish this story by telling what you are thinking and what you do.

____

Effort / Persistence

As the main character, finish this story by telling what you are thinking and what you do.

Jordan is responsible for keeping his room clean and tidy, but his mom says he has not been living up to this responsibility. Now Jordan's room needs a good cleaning and this will take the entire afternoon.

As Jordan, finish this story by telling what you are thinking and what you do.

As the main character, finish this story by telling what you are thinking and what you do.

As her share in the family chores, Sarah helps with the yard work. However, her dad says that the yard seems to have been neglected lately and now, Sarah must spend the entire afternoon in the yard.

As Sarah, finish this story by telling what you are thinking and what you do.

Peer Pressure

As the main character, finish this story by telling what you are thinking and what you do.

Several of Janet's friends at school are forming a club and they have invited Janet to join. However, the friends tell Janet that all members of this club must not be friends with Beth, another girl from school.

As Janet, finish this story by telling what you are thinking and what you do.

As the main character, finish this story by telling what you are thinking and what you do.

James and his friends are getting ready to go to their soccer game. The friends decide they are going to throw eggs at the house of a fellow soccer player whom they don't really like and they say that James must join them if wants to be "one of the boys".

As James, finish this story by telling what you are thinking and what you do.

Making Friends

As the main character, finish this story by telling what you are thinking and what you do.

When Garrett moved into the neighborhood this summer, he met Vicki through friends of the family. Now Vicki wants Garrett to meet some of her friends at a party, but Garret is very shy.

As Garrett, finish this story by telling what you are thinking and what you do.

As the main character, finish this story by telling what you are thinking and what you do.

A new student just registered in David's class. Because the new boy seems to have similar interests, David would like to become friends with him, but he feels too shy.

As David, finish this story by telling what you are thinking and what you do.

Thinking, Feeling and Behaving

As the main character, finish this story by telling what you are thinking and what you do.

Brian's friends are talking about the hockey game they are arranging for Friday night. As Brian approaches the group, his friends continue with their plans, but they do not include Brian in the plans and do not invite him to come along on Friday.

As Brian, finish this story by telling what you are thinking and what you do.

As the main character, finish this story by telling what you are thinking and what you do.

Maureen approaches her friends in the cafeteria and notices that they are talking about and planning a sleepover party for the weekend. Maureen does not get invited to the party.

As Maureen, finish this story by telling what you are thinking and what you do.

Peer Conflict

As the main character, finish this story by telling what you are thinking and what you do.

Jason's uncle sent him an autographed NHL poster and Jason brings it to school to show his friends. One of the boys in class grabs the poster from Jason and refuses to give it back.

As Jason, finish this story by telling what you are thinking and what you do.

As the main character, finish this story by telling what you are thinking and what you do.

Finally, the movie that everyone has been waiting for arrives. The line-up for tickets is long and not everybody will be able to get in. As Stephanie waits in line, a girl from class butts in front of Stephanie to join some other girls.

As Stephanie, finish this story by telling what you are thinking and what you do.

APPENDIX D

Teacher Questionnaire and Teacher Questionnaire Results

TEACHER QUESTIONNAIRE

1. Please indicate the concepts in Program Achieve that were:

0 – not completed 1 – begun but not completed 2 – completed

( ) Confidence

( ) Effort and Persistence (Motivation)

( ) Happenings, Thoughts, Feelings, Behaviors

( ) Self-Acceptance/ Self Esteem

( ) Goal-Setting

( ) Time Management and Organization

( ) Making Friends

( ) Handling Conflict

2. I found the training to be adequate in preparing me to implement the SPELT instructional approach with Program Achieve and other subjects.

[ ] Strongly Agree [ ] Agree [ ] Uncertain [ ] Disagree [ ] Strongly Disagree

3. Did you feel that two class periods per week were adequate to implement the intervention?

[ ] Yes [ ] No

4. If "No", should the instruction time be reduced or increased?

[ ] Reduced by ____________________ [ ] Increased by ______________________

5. In what other subject area(s) did you provide SPELT instruction?

____

____

____

6. What were the reactions of the students to the intervention?

7. What changes in the students' attitudes and / or behaviors have you observed since implementing the intervention?

8. Did you observe students using skills and / or strategies in other settings, that were learned in the intervention?

[ ] Yes [ ] No

9. Which particular strategies seemed most helpful to students?

10. Did parents ask what the intervention was about?

[ ] Yes [ ] No

Provide a brief summary of the types of questions asked.

11. Did parents comment on changes that they noticed in their child's attitudes or behaviors since the beginning of the intervention?

[ ] Yes [ ] No

Describe the changes that parents observed.

____

____

____

____

12. I would be interested in using SPELT - Program Achieve in the future.

[ ] Strongly Agree [ ] Agree [ ] Uncertain [ ] Disagree [ ] Strongly Disagree

13. I would recommend SPELT - Program Achieve to other teachers.

[ ] Strongly Agree [ ] Agree [ ] Uncertain [ ] Disagree [ ] Strongly Disagree

14. I will continue to use SPELT strategies in future instruction.

[ ] Strongly Agree [ ] Agree [ ] Uncertain [ ] Disagree [ ] Strongly Disagree

15. Do you feel that SPELT should be implemented at all grade levels and in all classrooms?

[ ] Yes [ ] No [ ] Unsure

16. Have you observed any positive changes in your students in the following areas?

a.	self-confidence	[ ] Yes [ ] No
b.	academic performance	[ ] Yes [ ] No
c.	getting started with work	[ ] Yes [ ] No
d.	working cooperatively with others	[ ] Yes [ ] No
e.	understanding emotions	[ ] Yes [ ] No
f.	ability/readiness to cope with more difficult tasks	[ ] Yes [ ] No
g.	attention span/time on task	[ ] Yes [ ] No
h.	ability to accept criticism	[ ] Yes [ ] No
i.	emotional well-being	[ ] Yes [ ] No
j.	effort	[ ] Yes [ ] No
k.	interactions with peers	[ ] Yes [ ] No
l.	handling interpersonal conflicts	[ ] Yes [ ] No
m.	accepting mistakes	[ ] Yes [ ] No

17. Additional comments regarding the intervention:

____

____

____

____

Teacher Questionnaire Results

Question 1: Please indicate the concepts in Program Achieve that were:

0 – not completed
1 – begun but not completed
2 – completed

Concept	0	1	2	Total N
Confidence	0	0	7	7
Effort and Persistence (Motivation)	0	0	7	7
Happenings, Thoughts, Feelings, Behaviors	0	0	7	7
Self-Acceptance/ Self Esteem	0	0	7	7
Goal-Setting	0	0	7	7
Time Management and Organization	2	2	3	7
Making Friends	0	2	5	7
Handling Conflict	1	1	5	7

Question 2: I found the training to be adequate in preparing me to implement the SPELT instructional approach with Program Achieve and other subjects.

Response	Total N / 6
Strongly Agree	0
Agree	4
Uncertain	0
Disagree	2
Strongly Disagree	0

Question 3: Did you feel that two class periods per week were adequate to implement the intervention?

Response	Total N / 6
Yes	1
No	5

Question 4: If "No", should the instruction time be reduced or increased?

Response	Total / 5
Reduced	0
Increased	5

Comments: (Increased by...)

- 1 class period.
- 2 periods.
- 60 minutes.
- One 20 minute period each day (total).
- At least one more period.

Question 5: In what other subject area(s) did you provide SPELT instruction?

- All areas. Worked well combined with religion.
- Religion, health.
- Religion.
- Religion. Also used some social studies periods.
- Religion. Social studies.
- Health. Language arts.

Question 6: What were the reactions of the students to the intervention?

- They enjoyed the posters and cartoons. Liked not having tests.
- The children enjoyed the activities and the discussions.
- They enjoyed the activities and looked forward to the next lesson.
- Enjoyed the time. Excited when the time came. Sheets – they found them useful and interesting at times.
- Some students enjoyed the program. Others did not.
- Some were very vocal, while others just seemed to be passive and offered no opinion of their own.

Question 7: What changes in the students' attitudes and / or behaviors have you observed since implementing the intervention?

- Taking more responsibility for their own actions. More considerate of others. Better problem-solvers.
- They seem to be more accepting of each other.
- Students are reminding each other about things they have learned.
- Haven't really observed any noticeable changes.
- There are positive changes for students who took part an active part. Those who did not seem to remain unchanged.
- Lots of shared honesty by some.

Question 8: Did you observe students using skills and / or strategies in other settings, that were learned in the intervention?

Response	Total / 6
Yes	5
No	1

Question 9: Which particular strategies seemed most helpful to students?

- Problem-solving. Thinking of a solution that would give the most positive outcome.
- Making friends.
- Making friends was most helpful to students.
- Goal-setting and time-management.
- I observed that the good students tried to use as many strategies as possible. However, other students did not seem to be interested in trying to improve, therefore no strategies were visible in their actions.
- "I can do it" attitude for many who kept trying.
- Handling conflicts.

Question 10: Did parents ask what the intervention was about?

Response	Total / 7
Yes	0
No	7

Question 11: Did parents comment on changes that they noticed in their child's attitudes or behaviors since the beginning of the intervention?

Response	Total / 7
Yes	0
No	7

Question 12: I would be interested in using SPELT- Program Achieve in the future.

Response	Total N / 6
Strongly Agree	0
Agree	4
Uncertain	1
Disagree	1
Strongly Disagree	0

Question 13 : I would recommend SPELT - Program Achieve to other teachers.

Response	Total N / 6
Strongly Agree	0
Agree	4
Uncertain	1
Disagree	1
Strongly Disagree	0

Question 14: I will continue to use SPELT strategies in future instruction.

Response	Total N / 6
Strongly Agree	0
Agree	6
Uncertain	0
Disagree	0
Strongly Disagree	0

Question 15: Do you feel that SPELT should be implemented at all grade levels and in all classrooms?

Response	Total / 6
Yes	6
No	0
Unsure	0

Question 16: Have you observed any positive changes in your students in the following areas?

	N/7	
	Yes	No
a. Self-confidence.	7	0
b. Academic performance.	3	4
c. Getting started with work.	5	2
d. Working cooperatively with others.	4	3
e. Understanding emotions.	3	4
f. Ability/readiness to cope with more difficult tasks.	5	2
g. Attention span/time on task.	4	3
h. Ability to accept criticism.	6	1
i. Emotional well-being.	7	0
j. Effort.	6	1
k. Interactions with peers.	6	1
l. Handling interpersonal conflicts.	3	4
m. Accepting mistakes.	6	1

Question 17: Additional comments regarding the intervention.

- My only concern is that with all the outcomes that have to be covered at each grade level, there isn't adequate time to devote to the social skills program.
- Several of the recommended activities seemed to be too difficult if presented as in the program. I had to adapt many paper and pencil activities to oral large group activities.
- This is a good program, but I feel some teachers may reject it because of the time it takes from regular class time to complete it properly.

APPENDIX E

Analysis of Variance Tables.

Two Factor Analysis of Variance with Repeated Measurements on One Factor

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Cognitive Competence						
Group	1	0.0001	0.0929	0.0929	0.14	0.705
Participant (Group)	195	132.0466	131.7686	0.6757		
Time	1	0.1938	0.1992	0.1992	1.17	0.282
Group*Time	1	0.0083	0.0083	0.0083	0.05	0.826
Error	166	28.3305	28.3305	0.1707		
Total	364	160.5794				
Social Competence						
Group	1	2.9895	4.3393	4.3393	8.29	0.004
Participant (Group)	195	105.3837	105.6256	0.5417		
Time	1	0.3054	0.3955	0.3955	1.69	0.196
Group*Time	1	0.8799	0.8799	0.8799	3.75	0.054
Error	166	38.8984	38.8984	0.2343		
Total	364	148.4568				
Physical Competence						
Group	1	1.7274	1.8055	1.8055	2.83	0.094
Participant (Group)	195	129.2048	129.6499	0.6649		
Time	1	0.2508	0.3223	0.3223	1.45	0.230
Group*Time	1	0.6784	0.6784	0.6784	3.06	0.082
Error	166	36.8334	36.8334	0.2219		
Total	364	168.6947				
General Competence						
Group	1	0.2593	0.5676	0.5676	1.22	0.271
Participant (Group)	195	94.3135	94.7163	0.4857		
Time	1	0.4008	0.4438	0.4438	2.55	0.112
Group*Time	1	0.2021	0.2021	0.2021	1.16	0.283
Error	166	28.7401	28.7401	0.1742		
Total	364	123.9157				
Internal Locus of Control - IARQ						
Group	1	326.49	365.22	365.22	10.41	0.001
Participant (Group)	196	6981.26	6964.50	35.53		
Time	1	2.90	2.05	2.05	0.14	0.711
Group*Time	1	158.80	158.80	158.80	10.66	0.001
Error	186	2771.80	2771.80	14.90		
Total	385	10241.25				

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Active Coping						
Group	1	0.4856	0.5187	0.5187	1.31	0.255
Participant (Group)	195	79.8865	79.7861	0.4092		
Time	1	2.5862	2.6223	2.6223	13.39	0.000
Group*Time	1	0.9630	0.9630	0.9630	4.92	0.028
Error	172	33.6794	33.6794	0.1958		
Total	370	117.6007				
Avoidant Coping						
Group	1	0.0245	0.0301	0.0301	0.08	0.784
Participant (Group)	195	80.3809	80.2916	0.4118		
Time	1	1.4406	1.4677	1.4677	7.25	0.008
Group*Time	1	0.9738	0.9738	0.9738	4.81	0.030
Error	172	34.8330	34.8330	0.2025		
Total	370	117.6528				
Support Seeking Coping						
Group	1	4.2571	3.7347	3.7347	5.78	0.017
Participant (Group)	195	129.9558	130.1033	0.6672		
Time	1	0.6578	0.6673	0.6673	2.42	0.122
Group*Time	1	0.2618	0.2618	0.2618	0.95	0.331
Error	172	47.4261	47.4261	0.2757		
Total	370	182.5586				
Distraction Coping						
Group	1	0.0630	0.1408	0.1408	0.25	0.618
Participant (Group)	195	114.0628	113.4592	0.5818		
Time	1	0.5697	0.5640	0.5640	2.19	0.140
Group*Time	1	0.1055	0.1055	0.1055	0.41	0.523
Error	172	44.2041	44.2041	0.2570		
Total	370	159.0051				